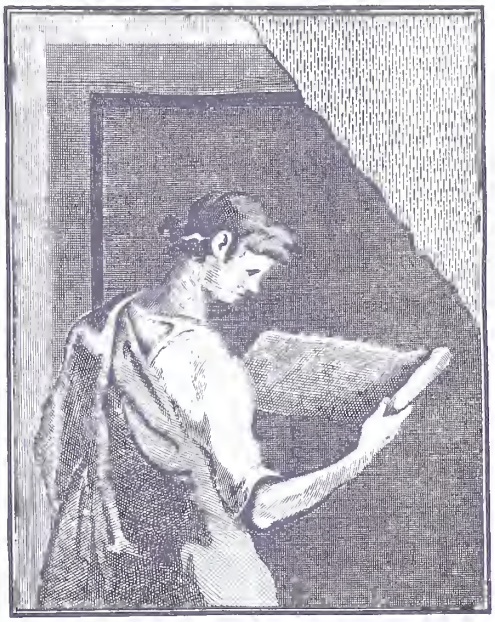

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THE DECORATIVE ART OF CRETE IN THE BRONZE AGE.

Introduction.

When in 1878 Professor Furtwängler and Professor Löschcke were sorting the fragments of painted vases which had been brought into the Polytechnion in Athens from various "Mycenaean" sites in Greece, they found that, "with the exception of the spiral and of a few motives derived from weaving, all the patterns of vases with lustrous paint, even those in which delight in fanciful combinations of lines had guided the artist's hand, were, in their oldest forms, representations of natural objects.[1] The material available for a study of Mycenaean design has been greatly increased since this statement was made, especially by recent excavations in Crete. There ornamented objects have been brought to light from all the successive stages of a civilization which extended from the beginning to the end of the bronze age. The object of this paper is to ascertain how far the observation of Professor Furtwängler about the pottery known in 1878 holds good for this wider and better understood field of Cretan decorative art. If the character of the designs of Cretan vases be determined, the kind of ornament which appears in other prehistoric sites of the Aegean basin will be intelligible, since the culture of these places will be found to be parallel and akin to one stage or another of Cretan culture.

The English excavators in Crete have divided Cretan pottery of the bronze age into three periods, to which they give the names: 'Early Minoan,' 'Middle Minoan,' and 'Late Minoan.'[2] Each of these three periods is again divided into three subdivisions. The Cretan bronze-age pottery which has been published is arranged according to these nine divisions in the table opposite page 50. In parallel columns are arranged according to the same classification the most important decorated objects of early Cretan civilization other than pottery and also the bronze-age pottery from other sites in the Aegean basin.

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[1] See Furtwängler and Löschcke, *Mykenische Vasen*, Introduction, p. iv.

[2] See A. J. Evans, *Essai de classification des époques de la civilisation Minoenne*, and R. M. Dawkins, *B. S. A.* X, pp. 195 and 196.

References to the publications of this material are not invariably given in the text but are always to be found in the table.[1]

Classification of Designs.

To apprehend better the nature and importance of the beginnings of Cretan ornament, a statement of the various kinds of design found in Cretan decorative art throughout the course of the bronze age may well be made at the outset. These designs may be divided into two main classes:

1. Imitative Designs in which there is representation of things seen or thought. These include:

(a) *pure naturalistic designs* which represent in a realistic way natural objects or other naturalistic designs not yet degenerated by copying, e. g., Fig. 1;

(b) *conventional naturalistic designs* in which the artist accepts conventional methods of representing natural objects, e. g., Fig. 2;

(c) *conventionalized naturalistic designs* in which, because of long periods of mechanical copying, representations of natural objects are rendered in a stereotyped fashion, e. g., Fig. 3;

(d) *sacral designs* which represent sacred objects.

2. Non-imitative Designs or compositions of lines for the sake of balance, rhythm, and harmony[2] in which the element of representation is not found. These include:

(a) *simple, stock patterns,* like spirals, crescents, dots, etc.

---

[1] The titles of periodicals quoted in this paper are abbreviated as follows:

A. J. A. = American Journal of Archaeology.
Arch. Anz. = Archäologischer Anzeiger, Beiblatt zum Jahrbuch des archäologischen Instituts.
Ant. Denk. = Antike Denkmäler.
Athen. Mitt. = Mitteilungen des kaiserlichen deutschen archäologischen Instituts. Athenische Abteilung.
B. C. H. = Bulletin de correspondance hellènique.
B. S. A. = Annual of the British School at Athens.
Ἐφ. Ἀρχ. = Ἐφημερίς Ἀρχαιολογική.
J. H. S. = Journal of Hellenic Studies.
J. R. I. B. A. = Journal of the Royal Institute of British Architects.
Mon. Ant. = Monumenti Antichi.
Röm. Mitt. = Mitteilungen des kaiserlichen deutschen archäologischen Instituts. Römische Abteilung.
Transactions = Transactions of the Department of Archaeology of the University of Pennsylvania.

[2] Compare D. W. Ross in *Proceedings of the American Academy of Arts and Sciences*, 1901, XXXVI, No. 21, p. 357 ff.

(b) *complicated designs* made up it may be of simple, stock patterns but constituting, by virtue of the way in which these motives are combined, original compositions, e. g., Fig. 4.

Fig. 1, from *J. H. S.* 1903, XXIII, p. 189, Fig. 8, 10.

Fig. 2, from *J. H. S.* 1903, XXIII, Pl. V, 2.

The distinction between 1a and 1b or 1c is a distinction of degree for in Cretan decorative art close studies of nature are rare. Flowers are always more or less conventionally treated. Yet between the designs of Fig. 1 and Fig. 2

Fig. 3, from *J. H. S.* 1903, XXIII, p. 197, Fig. 13.

Fig. 4, from *B. S. A.* 1902–3, IX, p. 20, Fig. 8.

there is too great a difference to admit of their being classed together. The distinction between 1b and 1c is this, that conventionalized naturalistic designs were once rendered in a more lifelike form; conventional naturalistic designs were not.

Early Minoan I.

From the first of the nine periods of Cretan bronze age pottery very little ware has been found and none has as yet been fully published. It is reported,[1] however, to be similar to the neolithic ware directly above which it lies. It is handmade and polished. Decoration, when it occurs, is obtained by

[1] See A. J. Evans, *op. cit.* p. 5 and *B. S. A.* 1903-4, X, p. 22.

incision, puncturation and in some cases, it seems, by paint. It is of the simplest linear-geometric character.

Early Minoan II.

In the second division of the early period, the same sort of primitive technique prevailed. The practice of incision continued, and there was also in use, especially at Vasiliki,[1] in the eastern end of the island, a method of decoration which consisted in firing the vase in such a way as to produce a brilliantly mottled red and black surface. The perfecting of this and of other processes of surface treatment inherited from neolithic epochs were throughout this period the potter's chief concern. A lustrous surface on a vase is obviously advantageous for practical reasons, and for aesthetic reasons also, it was probably preferred at first to painted decoration. For a polished lustrous surface affords of itself a kind of aesthetic pleasure and when, as at Vasiliki, there is the added pleasure afforded by the contrast of red and black patches of color, it is easy to see how such decoration would compete successfully with painted patterns which appeal to the instinct for rhythm and harmony of line. A typical ornament of this period is given in Fig. 5. The

Fig. 5, from *Transactions* I, Part III, Pl. XXV, G. V a.

boldness with which this pattern is applied to the vase shows a marked advance in decorative sense, though the design itself is shown by Mr. Evans[2] to have been derived directly from the incised decoration of earlier periods.

Early Minoan III.

In the third division of the early period a larger proportion of vases is painted.[3] The prevailing color of the paint is white on a slightly lustrous

[1] See table, opp. p. 50.

[2] *B. S. A.* 1902-3, IX, p. 98.

[3] The presence of incised vases in strata of this period is attributed by Mr. Evans (*B. S. A.* 1903-4, Vol. X, p. 23) to Cycladic influence. Simple incised geometric ornaments continued on stone vases throughout later periods. See, e. g., *Mon. Ant.* 1905, XIV, Part 2, cols. 473-474, Figs. 79 and 81, from the earlier palace (Middle Minoan II) of Phaistos.

brown or black ground-paint though occasionally the design-paint is brown and is applied to the clay as ground. The clay is well sifted and baked in the oven. The use of the wheel probably begins in this period, and simultaneously the fashioning of vases out of very thin clay.

The commonest principle of decoration[1] is a horizontal band of ornament about the upper part of the vase. Occasionally several zones of ornament appear. Within these zones the fundamental motive is the zigzag,

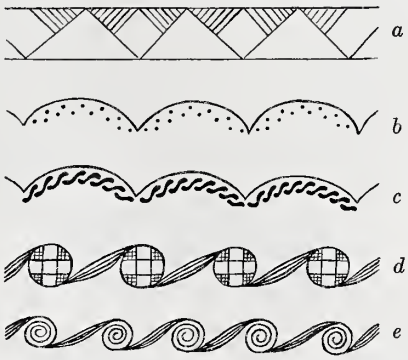

Fig. 6, from designs in *Transactions* I, Part III, Pls. XXVI–XXXIII.

an inheritance doubtless from earlier incised decoration. The simplest design in which it appears is shown in Fig. 6 *a*. But the other designs in this figure have an up and down character which suggests near relation to a zigzag. The arcs in Fig. 6 *b* and *c* are direct translations of the zigzag into curvilinear design while in *d* and *e*, if the circular device be regarded as the downward line in a zigzag, we get again a scheme which is akin to a simple zigzag line. This period, then, is marked by the transition from rectilinear to curvilinear ornament. The cause of the change was doubtless the established use of the brush, which made curvilinear design easy.[2] The quirks which enforce the arcs in Fig. 6 *c* probably owe their existence to the use of the brush by a turn of which they could easily be made. They enjoyed a long life during later periods of vase painting.[3]

---

[1] See E. H. Hall in *Transactions*, Vol. I, Part III, p. 198 ff.

[2] Compare Duncan Mackenzie in *Phylakopi*, p. 250.

[3] See *Argive Heraeum* II, Pl. LV, 22, for an instance of its use in the Late Minoan III period; *Athen. Mitt.* 1903, XXVIII, Pl. XVII, 4, opp. p. 144, for the geometric period; *Argive Heraeum* II, Pl. LIX, 18 a and b for "Proto-Corinthian" ware; *Vases antiques du Louvre* I, Pl. 43, E 612 for Corinthian ware; *ibid.* II, Pl. 56, E 784 for Italian-Ionian vases. It is not necessary to suppose that this pattern was adopted in every case from the preceding period. Such simple ornaments may have been arrived at independently many times. A vase of the Late Minoan I period covered with this pattern was found in a tholos tomb at Hagia Triada (*Mon. Ant.* 1905, XIV, Part 2, cols. 685-687 and Fig. 4). Sig. Paribeni, after

An important pattern which appears as a frequent[1] motive in Early Minoan III vases is the spiral. In Egypt spirals were painted on vases in predynastic periods, but in Crete up to the time of the Vth and VIth dynasties paint was not widely used as a method of decoration, and consequently spiraliform ornament, which is not easily incised, was not employed.[2] For seal-

Fig. 7, from *Transactions* I, Part III, Pls. XXVII, XXVIII, XXX and XXXII.

stones alone, the signs of individual possession and authority, did the toil of cutting out a curved pattern seem justified.

---

pointing out the fact that such quirks were made by a single stroke of the brush, suggests that the pattern as it appears on the Hagia Triada vase may be a schematized form of ducks like those which occur on decorated objects of the iron age in Central Europe. This suggestion seems entirely improbable in view of its appearance in so early a stage of Cretan art as the Early Minoan III period. Equally improbable is the idea that this pattern is a degenerate cable pattern (Hogarth and Welch, *J. H. S.* 1901, XXI, p. 82 and *Transactions*, Vol. I, Part III, p. 201).

[1] Mr. Evans *op. cit.* p. 6, reports spiraliform designs in Early Minoan II vases.

[2] In Syra, where incision continued to be practised during the Early Minoan III period, the difficulty of cutting on the round was obviated by stamping the design into the clay. But this method seems not to have been known in Crete.

Among these early experiments in curved lines appear several patterns (Fig. 7), which have a slight resemblance to natural objects. Fig. 7 *a, b, c, d* look like leaves. They are the counterparts of patterns which appear again in the second division of the middle period.[1] In Fig. 7 *c* appears a pattern which, were it from a later period, would be called a conventionalized flower or leaf.[2] The artist's task was here to decorate a lozenge-shaped piece of clay[3] with an ornament adapted to the shape of the field. He drew two chevrons in the corners and then bent their ends around to fill the central space. Again,

Fig. 8, from *Transactions* I, Pa·t III, Pls. XXVIII, XXX and XXXII.

the elongated dots of Fig. 7 *b* give the effect of leaves springing alternately from a stalk, merely because they are tipped on end.

Are these designs naturalistic? It seems improbable that the decorators of these vases ever seriously attempted to represent natural objects. Rather in experimenting with straight and curved lines in their search for balanced and harmonious decoration they happened upon designs which looked like

---

[1] Compare, e. g., the upper and lower bands of ornaments on the cup in *J. H. S.* 1903 XXIII, Pl. VI, 4.

[2] See e. g. R. M. Dawkins, *J. H. S.* 1903, XXIII, p. 254. Similarly Hogarth and Welch call patterns like those in Fig. 7 degraded leaves, *J. H. S.* 1901, XXI, p. 82.

[3] This sherd is broken on the two short sides only. It may have been a part of an open-work dish like the much later lid in *B. S. A.* 1903-1904, X, p. 224, Fig. 7.

natural objects. They saw the resemblance, and it pleased them. And here we see the prophecy of imitative designs, for as soon as the artist feels the distinction between designs which represent something and those which do not, and takes pleasure in this recognition, the history of imitative design has begun. The geometric animals in Fig. 8 are further illustrations of the way in which the artist put together types of natural forms out of geometric elements.[1] The bodies of these animals, apart from their heads and tails, are equivalent to the hatched triangles and circles of purely geometric designs. On the whole, the designs of this period furnish excellent illustrations of a principle which is confirmed in the succeeding Middle Minoan I period, namely, that *naturalistic designs do not necessarily begin as a realistic reproduction of a particular natural object but as an arrangement of lines which suggest rather than picture natural forms.* Or, to put this principle in terms of the classification of Cretan pottery made above, the motive of imitation which produces designs which represent something does not operate so strongly in this early period as the instinctive desire for rhythm, harmony and balance, which leads to experiments in composition of lines and, in the end, to pure design. Accordingly, since the designs of this early period show to so slight a degree the elements of imitation, they should be assigned to the non-imitative class, and again, since they are simple and repeated on different vases, they should be assigned to the simple stock group within that class.

Middle Minoan I.

In deposits of the Early Minoan III period have been found seal stones with designs analogous to those on Egyptian "button seals" of the VI dynasty,[2] which ended in 2475 B. C.[3] The second division of the middle period will be seen to be parallel to the XII dynasty in Egypt, which dates from 2000 to 1788 B. C.[4] Between these two dates was the Middle Minoan I period. In passing to this period from the last division of the early period, we pass over no gap, but merely advance a step further in the continuous development of Cretan ceramics. The technique of the pottery of the two periods is nearly the same. The shapes of the Middle Minoan I vases in *B. S. A.* 1902-1903, IX, p. 305, Fig. 5 are scarcely different from those to which the fragments which we have just examined are to be assigned.[5] The chief change in technique is

[1] Compare Edgar in *Excavations at Phylakopi in Melos*, p. 100 and Pernier, *Mon Ant.* 1902, XII, col. 114.

[2] See A. J. Evans, *op. cit.* p. 7.

[3] According to the later chronology which, however, leaves a margin of error of a hundred years either way from this date. See Breasted, *History of Egypt*, p. 16.

[4] With a margin of error of only four years, *ibid.* p. 22.

[5] See *Transactions* III, p. 194 ff.

the habitual use of an accessory color (red, crimson, or orange) to enhance the white design.[1]

But changes in design are more important for our purpose than changes in technique. In general, the decoration of these vases is reminiscent of the preceding period. The tailed spiral in Fig. 9 and the running spiral of Fig. 10 suggest the patterns of Fig. 6. The festoons, the quirks, and groups of lines in Fig. 11 are all motives which have appeared before (Fig. 6), while the older linear method of decoration continues unchanged on beaked jugs (*B. S. A.* 1902-3, IX, p. 305, Fig. 5). And yet, in spite of these similarities there is a marked difference in the decoration of the two periods. In the matter of syntax of design the patterns in Figs. 9–13[2] show an advance beyond Early Minoan III design. The patterns of the earlier period are applied in horizontal zones, each of which consists for the most part of a single decorative motive repeated a sufficient number of times to encircle the vase. But designs of this period are applied freely and with far fewer repetitions to the decorated field.

Fig. 9, from *B. S. A.* 1902–3, IX, p. 305, Fig. 4.

Fig. 10, from *B. S. A.* 1902–3, IX, p. 305, Fig. 5.

In Figs. 11 and 13 all traces of horizontal zones of ornament have disappeared. In those vases where decoration is still applied in zones (Fig. 12), the designs are more elaborate in character, a fact to be explained in part by the possibility of contrast and variety afforded by the use of a second color. This increased elaboration of design is the most distinctive difference in kind between the ornament of this and that of the preceding period. The decoration of Fig. 12 is a careful attempt to fill a band of ornament with graceful and harmonious lines. Though the curves springing from the oblique lines in this design bear some resemblance to leaves, the motive of imitation hardly enters in here. The shape of the field to be decorated and the artistic arrangement of lines within that field were quite evidently uppermost in the mind of the decorator. This design, therefore, should be assigned to the non-imitative class and because of its complex character to the second division of that class.

---

[1] Mr. Evans noted the beginnings of polychrome painting in the preceding Early Minoan III period, *op. cit.* p. 6.

[2] This vase because of its sturdy shape I have assigned to this Middle Minoan I class, though its decoration seems somewhat later.

Lastly,[1] there is to be noted in the designs of this period an increase in naturalism. The tendrils in Fig. 12 and the leaflike design in Fig. 13 resemble nature more closely than did any design in the Early Minoan III

Fig. 12, from *B. S. A.* 1902–3, IX, p. 303, Fig. 2.

Fig. 11, from *B. S. A.* 1902–3, IX, p. 305, Fig. 5.

Fig. 13, from *Transactions* I, Part III, Pl. XXV, A, Ph. II a.

period, although now, as then, naturalistic patterns are formed from rectilinear and curvilinear motives.

Middle Minoan II.

The pottery of the succeeding division of the middle period is well known. It has long been termed "Kamares ware" after the local name of the cave on Mt. Ida, where it was first found.[2] It has attracted the attention of scholars because of the quantity in which it has appeared (see table opp. p. 50) and because of the delicacy of its shapes, the richness of its color, and the harmony of its designs. In contrast with the thick clay and sturdy shapes of the preceding period we note here a clay as light and thin as that of a modern Haviland teacup. The cups of this "eggshell ware" show a variety of graceful shapes, which attests the high degree of technical skill to which the potter has attained (see, e. g., *J. H. S.*, 1903, XXIII, Pl. V). The ornamentation consists in some cases of relief work but more commonly of polychrome painted patterns applied to a dark body paint. The chief colors are white, orange, crimson, red, and yellow. Such perfection of technique implies a civilization far removed from

[1] A more illuminating example of complex non-imitative Middle Minoan I design is shown in Pl. I of *B. S. A.* 1904–1905, XI, which has been issued since this paper went to press.

[2] See *Parnassos*, 1886, X, p. 339 ff. and *Röm. Mitt.* IX, p. 100, Mr. Dawkins has pointed out that this name cannot properly be used of both technique and period. See *B. S. A.* 1903-4, X, p. 192.

Fig. 14, from *J. H. S.* 1901, XXI, Pl. VII; *ibid.* 1903, XXIII, Pls. VI and VII; *B. S. A.* 1902–3, IX, p. 305, Fig. 4; and *Mon. Ant.* 1895, VI, Pl. XI.

primitive life. Similarly the designs of this ware imply an æsthetic taste far removed from primitive art. Occasionally, still, the ornament on these vases is applied in zones (Fig. 14 *j*), though more commonly in an undivided design.

The classes into which the ornament of this period falls are three: the two kinds of non-imitative designs—simple and complicated—which were found in the preceding period and the conventional naturalistic class, the tendencies toward which were seen in both the early Minoan III and the Middle Minoan I periods. Examples of this kind of design are shown in Fig. 14. Fig. 14 *h* is an excellent example of the way in which flowerlike designs were made up of familiar geometric motives. The stem is a zigzag line, while the petals are represented by curls and the center by a dot. In later Mycenaean design this flower would be called degenerate or stylized. Here it seems to be a new invention. In Fig. 14 *i* another circular device of a dot surrounded by stamenlike rays is shown. In Fig. 14 *j* the decorative border design of the uppermost and lowest zones seems to be a stiff representation of buds or fruit and stems, though this design is quite possibly a descendant of the running designs which characterize the Early Minoan III period. Among the conventional representations of leaves the designs in Fig. 14, *a–e*, should be noted.

This group of designs confirms the principle stated on page 12 that naturalistic designs do not begin as realistic reproductions of natural objects, but compared with the designs of the preceding period, they show decided progress toward the achievement of a naturalistic style. It may be that the beginnings of this style should be assigned to this period. The decoration of the jar in Pl. I, Fig. 2, is certainly very similar to the design of Fig. 1.[1] However that may be, the conventional naturalistic motives of this period must be regarded as representing a stage of growth intermediate between the first steps toward naturalism in the Early Minoan III period and the fully developed naturalistic style of the Middle Minoan III period.

Non-imitative designs of this period may be divided as before into two classes according to their complexity. Among the simple stock designs of this period are the following: quirks and dots, Figs. 15, 17 and 19; festoons, Fig. 16; spirals; the linear geometric ornaments of Fig. 17; the crescents in *B. S. A.* 1903-1904, X, p. 15, Fig. 4 *a*, *ibid.* p. 16, Fig. 6, *a* and *c* and *Mon. Ant.* 1905, XIV, Part 2, Pl. XLIII, 2; concentric circles, Fig. 18; certain designs appropriate to weaving like those in Figs. 20 and 21; the waved lines and comb pattern in *B. S. A.* 1903-4, X, p. 16, Fig. 5, 1; various forms of

[1] The lily in *J. H. S.* 1901, XXI, Pl. VI b, seems to be transitional between the Middle Minoan II and Middle Minoan III style. Its orange paint connects it with Middle Minoan II vases while the realistic rendering of the flower is after the Middle Minoan III style.

crosses and rosettes, Fig. 19 and *Mon. Ant.* 1895, VI, Pl. XI, 27; *B. S. A.* 1903–1904, X, p. 17, Fig. 6, m and b; *Mon. Ant.* 1905, XIV, Part 2, Pl. XLII, 1; *J. H. S.* 1903, XXIII, Pl. VI, 1, and the hooked ornaments of Fig. 22. Of many

Fig. 15, from *Transactions* I, Part III, Pl. XXV.

Fig. 16, from *B. S. A.* 1903–4, XI, p. 15, Fig. 4.

of these patterns nothing more need be said than that they occur. In case of others further comment is in place.

Fig. 17, from *Mon. Ant.* 1895, VI, Pl. IX.

Fig. 18, from *Mon. Ant.* 1895, VI, Pl. IX.

The "comb pattern" in *B. S. A.* 1903-4, X, p. 16, Fig. 5, 1, occurs on Cretan neolithic ware, *J. H. S.* 1903, XXIII, Pl. IV, 24 and 29.

Fig. 19, from *Mon. Ant.* 1895, VI, Pl. IX.

Fig. 20, from *Mon. Ant.* 1895, VI, Pl. XI.

The crescents in *B. S. A.* 1903-4, X, p. 15, which reappear in frescoes of this period, are a motive which is characteristic of Samian ware. Boehlau[1] expressed his belief that this motive was known in Mycenaean art and Mr.

[1] *Aus Ionischen und Italischen Nekropolen*, p. 65.

Mackenzie and Mr. Edgar[1] recognized that this belief was confirmed by the crescents found on vases from Crete and Melos. The crescent has also been found in the late Minoan I period.

Again the cruciform ornaments[2] cited are to be connected with both later

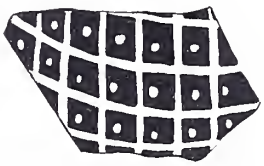

Fig. 21, from *Mon. Ant.* 1895, VI, Pl. X.

Fig. 22, from *Mon. Ant.* XIV, Part II, Pl. XLII, 3.

Mycenaean and Samian design. On Samian vases the cross is commonly the central ornament of a latticed pattern similar to that in Fig. 21, a combination which, though not actually found in Middle Minoan II ware, is yet entirely in keeping with its character. Identically the same latticed pattern filled with

Fig. 23, from *J. H. S.* 1901, XXI, Pl. VI.

Fig. 24, from *B. S. A.* 1903–4, X, p. 16, Fig. 5.

crosses appears in Attic red-figured vases, especially as an ornament on cloth[3] where Ionic motives might well be expected.

The distinction between the simple and complicated classes of non-imitative designs is sometimes slight and cannot always be made with certainty. Simple patterns such as spirals and quirks are used so much that they belong to the artist's stock repertoire of patterns, while the complicated designs are rather the original composition of the artist. A pattern so original as that in Fig. 4 which belongs to this period would certainly not be often copied.

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[1] *J. H. S.* 1903, XXIII, p. 179 note and *Phylakopi*, p. 122.

[2] Compare also the cruciform patterns on "Kamares" fragments from Phylakopi, *Phylakopi*, p. 149, Figs. 127–129, and those in *J. H. S.* 1901, XXI, p. 94, Fig. 28.

[3] Furtwängler-Reichhold, *Griechische Vasenmalerei*, Pl. XX. Compare the embroidered cloth represented in the Hagia Triada fresco in *Mon. Ant.* 1903, XIII, Part 1, Pl. 10.

Other designs which look original are shown in Figs. 23 and 24. But in some cases it is impossible to say whether a pattern was common or not. Again the method of combining simple stock motives may be so simple that it is difficult to say to which class the resulting design should be assigned. A row of dots would be counted as a simple design. But the decoration made up of dots and lines in *J. H. S.* 1901, XXI, Pl. VII, 9, might well be regarded as a complex design.

Some of the finest designs of this period combine conventional naturalistic with non-imitative ornament, as for example Fig. 25. With the exception of

Fig. 25. from *B. S. A.* 1902–3, IX, p. 120, Fig. 75.

the groups of three leaves which spring in pairs from the four corners of the design, this ornament is quite similar to that in Fig. 4 which was taken as typical of the complicated designs of the non-imitative class. But from the addition of these leaves a mixed design results. Similar groups of leaves spring from a circular motive in Fig. 14 *e*. They suggest such combinations of leaves and spirals as that in Furtwängler and Löschcke, *Myk. Thon.* Pl. VI, 31;[1] Boehlau, *op. cit.* p. 54, Fig. 22; p. 55, Fig. 25 and p. 81, Fig. 36; *Naukratis* I, Pl. VI, 3, II, Pl. VII, 5 and *Tanis* II, Pl. XXVIII, 4. Here again Middle Minoan vases seem to have furnished prototypes for the decoration both of Mycenaean (Late Minoan) vases and of the vases of Samos, Naukratis, and Daphnae. The artistic merit of the decoration of this period varies greatly. Some of the mixed designs like Fig. 25 and *J. H. S.* 1903, XXIII, Pl. V, 1 and Pl. VI, 3, rival in richness and harmony the designs of any later period of Cretan bronze age art. In other cases (Figs. 18, 26 and 27) the designs seem

[1] Compare the statements of Hogarth and Welch, *J. H. S.* 1901, XXI, p. 97, that "Kamares" patterns do not survive in the Mycenaean style. More analogies between the designs of these two periods are noted later.

to have been less successfully constructed and a kind of distorted, fantastic ornament results.

If, in our attempt to understand the designs of this period, we turn for light to other decorated objects than vases, we are disappointed to find the material at hand scanty. Middle Minoan frescoes have been found in small quantities both at Knossos and Phaistos,[1] but they have added little to our knowledge of the decorative art of this period. Another art known to have flourished in this period is metalwork, some of the characteristics of which are reflected in vases. It is well known that the thin clay of Middle Minoan II cups, their straplike handles and their knobs made to look like metal rivets were affected by the potter with the purpose of making his ware resemble the more costly products of the goldsmith's or silversmith's art.[2] Mr. Evans thinks that in the matter of design also, the potter was indebted to the worker

Fig. 26, from *Mon. Ant.* 1895, VI, Pl. IX, 1.

Fig. 27, from *Mon. Ant.* 1895, VI, Pl. IX.

in metal. The designs in *B. S. A.* 1902-3, IX, Pl, II, 1 and in Fig. 4 he regards as derived from metalwork.[3] But this is a matter of probable surmise, not certainty, since so few examples of the metal decorations of this period have been preserved to us.

Of another art, however, which flourished in this period, traces have been found, and these traces we owe, as we owe the relics of the ceramic art, to the indestructible character of clay. Among the Middle Minoan II vases found beneath the "olive press rooms" at Knossos were found clay seal impressions. Two of these are reproduced in *B. S. A.* 1902-3, IX, pp. 20 and 21, Figs. 9 and 10. If we examine the designs of these two seal impressions, we observe elements not found in vases of this period. First, in Fig. 9, the gem cutter's

[1] See *B. S. A.* 1901-1902, VIII, p. 24, *J. R. I. B. A.* 1902-3, p. 109, Figs. 1 and 2, and *Mon. Ant.* 1905, XIV, Part 2, col. 403.

[2] Compare Hogarth, *B. S. A* 1899-1900, VI, pp. 101 and 102; *ibid.* 1902-1903, IX, p. 314, and *Mon. Ant.* 1903, XII, col. 113.

[3] See *B. S. A.* 1902-3, IX, p. 20.

attempt to suggest by a wild goat and plant a scene from the outdoor world attracts attention. Nothing so naturalistic or so original has appeared on vases. Equally interesting is the design of the other seal. For here amid spirals, scrolls, quatrefoil rosettes and other decorative motives familiar to us from vases of this period appears a conventional flower which resembles the papyrus blossoms known in contemporary Egyptian art,[1] and in later stages of Cretan art.[2] Again, among the clay sealings found in the remains of a Middle Minoan II building to the southeast of the Knossos palace was one (*B. S. A.* 1901-2, VIII, p. 106, Fig. 63) which showed a lily design derived from a XIIth dynasty scarab and two others (*loc. cit.* p. 107, Figs. 64 and 65) which bore the design of the sacred double axe. Both of these motives appear in the following period on vases. Two conclusions may be drawn: first, that the gem cutter's art was subject to Egyptian influence in this period,[3] and second, that the seals of this period anticipate the motives of later vases. The designs of seal stones seem in some cases to have furnished inspiration to the vase painters of this period. The decoration of the jar in Pl. I, Fig. 1, is obviously adapted from the gem cutter's art as Sig. Pernier points out (*Mon. Ant.* 1905, XIV, Part 2, col. 459). The circle which confines the main part of the decoration is equivalent to the field of a seal while the spiraliform pattern within is such as is commonly used for decorating seals.

Middle Minoan III.

We come now to the Middle Minoan III period, the era of the beginning of the new palace at Knossos. At the first glance over the material available for a study of the design of this period we observe that, contrary to what has before been the case, painted vases are less numerous than other decorated objects. Our knowledge of the character and tendencies of the art of this period would be far less complete than it is, were it not for the lucky circumstance which preserved the collection of small faience objects in the "Temple Repositories" of the Knossos palace. These well-known repositories included the appurtenances of a shrine of the snake goddess, conspicuous among which were the figures of the goddess herself and of her votaries. There were also found a number of votive robes and a series of small models of shells, fruit and flowers

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[1] Compare, e. g., the papyrus blossoms from a Beni Hasan wall painting in Borchardt, *Die ägyptische Pflanzensäule*, p. 27, Fig. 46, and the later Ptolemaic treatment of the flower in *ibid.* p. 42, Fig. 68.

[2] See Pl. II.

[3] For further evidence of the influence of Egyptian XII the dynasty scarabs on seals of this period see A. J. Evans, *Cretan Pictographs*, p. 58, Fig. 49, and Pernier in *Mon. Ant.* 1905, XIV, Part 2, col. 446.

which had served as offerings or as ornaments of the shrine.[1] Since these faience objects are in so many cases painted with patterns similar to those found on vases and since their decoration involves no principle foreign to vase-painting, it will be well to consider their designs along with those of the painted vases of the period, as soon as we shall have reviewed the general characteristics of Middle Minoan III ware.

Vases of this period may frequently be recognized by their dull purple slip and powdery white paint.[2] They differ, therefore, from the ware of the preceding period in the loss of the fine black glaze ground and the decline of polychrome decoration. From the late Minoan I vases, on the other hand, they are distinguished by the use of white as the usual color for the main design instead of for mere accessories of the decoration.

The designs are applied to the field to be decorated with absolute freedom (see, e. g., Fig. 1). This free treatment of the design goes hand in hand with the achievement of a purely naturalistic style.

If we follow the order of the classification made on page 6, we shall begin our study of Middle Minoan III ornament with designs of the highly naturalistic style of which Fig. 1 furnishes a good example. It marks the acme of naturalism in Cretan vase painting. Equally free and lifelike are the grass pattern in *B. S. A.* 1902–3, IX, p. 50, Fig. 26 d, and the crocuses in *ibid.* 1903–4,

Fig. 28, from *B. S. A.* 1902–3, IX, p. 82, Fig. 58.

X, p. 17, Fig. 6 b, and in Fig. 28, where they serve as decoration of the votive garments of the snake goddess. Most of the ornaments of the shrine bear witness to the same love of nature. Among them are models in the round of fruit, flowers, flying fish, and shells. Shells seem to have been a favorite decoration. Hundreds of real shells of the varieties still known in the island were recovered from this shrine alone. The shell appears also on seal stones (*B. S. A.* 1902–3, IX, p. 56, Fig. 34) and as an ornament on a faience bowl (*ibid.* p. 73, Fig. 51).

Now it is noteworthy that many of the faience objects from this shrine are to be closely connected with Egyptian faience work. Mr. Evans (*B. S. A.* 1902–3, IX, p. 63) has pointed out the following affinities: (1) the glaze on these ornaments is similar to that on Egyptian porcelain; (2) the faience

[1] See *B. S. A.* 1902-1903, IX, pp. 38-94.

[2] See A. J. Evans, *B. S. A.* 1903-4, X, p. 8.

beads found in the temple repositories are like the Egyptian beads of the XIIth and XIIIth dynasties in Egypt, except for a slightly smaller perforation; (3) the signs found on the pieces for inlay correspond to those used by Egyptian inlayers,[1] and (4) Egyptian designs are copied in Cretan art. This evidence proves the existence of Egyptian influence in Crete during the Middle Minoan III period.

Of the two types of flowers, the crocus and the lily, which are most characteristic of the designs of this period, one, the lily, is known in XIIth dynasty Egyptian art,[2] while the other, the crocus, is not unlike some representations of the Egyptian lotus.[3] But in Egyptian art these flowers belong commonly to large wall paintings, the purpose of which was to attest the deeds of rulers. The desire for decorative effect was therefore subservient to the desire for historical records. The flowers which are introduced into such paintings represent commonly the background for fowling scenes or the like. Though drawn with the greatest fidelity to nature, they are crowded in stiff rows or groups into their place in the larger scene. Now when Cretan artists came to borrow types of flowers from Egypt they applied them to their vases with the greatest freedom and with a sense for decorative effect, trained by long practice in non-imitative and conventional naturalistic designs. Cretan flower types are for this reason more difficult to assign to a definite botanical species than Egyptian types, though they give a general effect which is more realistic. A case in point is Fig. 29 which, as Mr. Evans has pointed out,[4] is an adaptation of the lotus clumps of Egyptian art.[5] Here the method of arrang-

Fig. 29, from *B. S. A.* 1902–3, IX, p. 82, Fig. 58.

ing the flowers is the same as in Egyptian art, yet every trace of Egyptian stiffness is gone. Generally, however, methods of combining and arranging flowers were not borrowed from Egypt.[6] On another votive robe from the snake goddess shrine (*B. S. A.* 1902-1903, IX, p. 82, Fig. 58) detached blossoms

[1] But these Egyptian inlayers lived in the time of either the early dynasties or of the new empire.

[2] See Borchardt, *Die ägyptische Pflanzensäule*, p. 18, Fig. 30, and Petrie, *Hawara, Biahmu and Arsinoe*, Pl. 27, 5 and 6.

[3] See Beni Hasan I, Pl. XII, lower register.

[4] *B. S. A.* 1902-3, IX, p. 83.

[5] See e. g. Petrie, *Decorative Art*, p. 56, Fig. 128.

[6] See below, p. 28.

are painted in rows, while on the cup in *B. S. A.* 1903-1904, X, p. 17, Fig. 6 b, they are scattered loosely.[1]

Conventional naturalistic designs are not numerous in this period. Fig. 30 shows one instance of this kind—a fern pattern—which is obviously derived

Fig. 30, from *J. H. S.* 1903, XXIII, p. 178, Fig. 5.

from such patterns as those in Fig. 14 *b* and *c*. Other instances of conventional representations of natural objects occur among the faience ornaments of the temple repositories. One is the representation of rocks or of the

Fig. 31, from *B. S. A.* 1902–3, IX, p. 67, Fig. 44.

natural surface of the ground which appears among the models of marine life in *B. S. A.* 1902-1903, IX, p. 67, Fig. 46. With it should be associated a pattern to which the name rock-work pattern has been given. It is used in marine scenes[2] and it frequently defines the field of ornament in later designs

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[1] *Cf.* the restoration of the lily fresco in *Phylakopi*, p. 76, Fig. 64. The plaster fragment from Thera in Perrot and Chipiez, *Histoire de l'art*, VI, p. 537, Fig. 211, and the inlaid dagger from Mycenae in *ibid.* Pl. XIX, opp. p. 784.

[2] See R. C. Bosanquet, *Phylakopi*, p. 70 and A. J. Evans, *The Prehistoric Tombs of Knossos*, p. 156.

on vases.[1] Another is the scale pattern used in the faience relief of a wild goat (*B. S. A.* 1902-1903, IX, Pl. III) for the same purpose of representing the surface of the ground. It recurs in later periods (see below, p. 33), but with no imitative purpose. The third conventional naturalistic ornament from the shrine is the faience pendant in Fig. 31. The two flowers at the sides of this ornament with curving petals and solid central lobe resemble the conventional Egyptian type of lily. But here there is no more naturalistic treatment of the motive than is found in Egypt. The manner in which a third lobe is added in the center of the ornament to complete the symmetry of the design is worth noticing. It makes the central part of the pendant to consist of which we shall find as a separate ornament on both vases and frescoes of later periods.[2]

Lastly, among the imitative designs of this period should be mentioned two sacral patterns, the shield and the double axe. The former, which ornaments the rim of a faience bowl of this period (*B. S. A.* 1902-1903, IX, p. 72, Fig. 49) is a decorative motive which appears frequently in later stages of Cretan art.[3]

Turning now to the non-imitative designs of this period we note first of all the quirk (*B. S. A.* 1902-1903, IX, p. 75, Fig. 54 a and b), the persistent appearance of which in all these early periods of Cretan ornament is a strong argument for continuous native development. On the upper and lower bands of ornament from the jug in Fig. 32—which may, however, be a Melian

Fig. 32, from *B. S. A.* 1902–3, IX, p. 50, Fig. 26.

importation—and in *J. H. S.* 1903, XXIII, p. 189, Fig. 8, Nos. 1, 2 and 3, appear spirals and a pattern called by Mr. Mackenzie (*ibid.* pp. 160 and 181) the ripple motive and derived by him from the rippled surface of neolithic ware. This derivation seems less probable now that our knowledge of Early and Middle Minoan pottery is more extensive, for the ripple motive does not appear to have been in use during these early periods.

Among the more complex patterns of the non-imitative class are two

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[1] See Fig. 39.

[2] See *J. R. I. B. A.* 1902-3, p. 130, Fig. 81, *Mykenische Vasen*, Pl. I, 1, and below, p. 39.

[3] See Hastings, A. J. A. 1905, IX, p. 285.

designs from the votive robes of the snake goddess (Fig. 33 and *B. S. A.* 1902-1903, p. 77, Fig. 56b). The latter linear design is similar to a latticed pattern on a fresco from Knossos (*J. R. I. B. A.* 1902-1903, p. 129, No. 76) and to the latticed decoration of the preceding period. The pattern on the votive belt in Fig. 33 is also reminiscent of Middle Minoan II design.

The class of mixed designs is represented in this period by the pattern in Fig. 34. Except for the added grasses this pattern too is typical of the design of the preceding period (see Fig. 4 and *Mon. Ant.* 1895, VI, Pl. X, 27).[1]

Fig. 33, from *B. S. A.* 1902–3, IX, p. 82, Fig. 58.

Fig. 34, from *B. S. A.* 1903–4, X, p. 9, Fig. 2.

Late Minoan I.

Large quantities of pottery of the succeeding Late Minoan I period have been brought into the museum at Herakleion during the last six years, but only a small number of these vases has been published (see table opp. p. 50). The publication of the excavations at Gournia, which have yielded more of this pottery than any other site, is shortly to appear.

In technique this ware differs widely from the preceding. Some vases are still painted in the fashion prevalent at the end of the Middle Minoan III period, that is, with white designs on a dark paint ground, but more numerous are vases painted in a fully developed Mycenaean technique of dark glaze paint design on the light ground of the clay. Characteristic is a combination of the two techniques of light-on-dark and dark-on-light designs upon the same vase (*J. H. S.* 1902, XXII, Pl. XII, 2).[2] Characteristic also of this period is the use of superadded white. The eyes of spirals are commonly ornamented with a circle of white dots, and bands of dark paint are often used as the background for rows of dots or leaf-like splashes of white (*J. H. S.* 1903, XXIII, p. 106, Fig. 7, and forthcoming Gournia publication). This practice must be regarded as the continuation of Middle Minoan II technique.

[1] Mr. Evans notes that this design is analogous to Egyptian Middle Empire decoration.

[2] Combinations of the two techniques are known as early as the Middle Minoan II period. See *J. H. S.* 1903, XXIII, p. 177, and Pl. VI, 4.

Pure naturalistic designs are numerous in this period. Among those which have appeared in earlier epochs are the grass patterns of Fig. 35,[1] which may be compared with Pl. II, Fig. 2 and *B. S. A.* 1902-1903, IX, p. 50, Fig. 26 d; the lily of *J. H. S.* 1902, XXII, Pl. XII, 3, which may be compared with Fig. 1; and the crocus, which is a common ornament both on Gournia vases of this period, and in Middle Minoan III design. Two other survivals of earlier decoration are to be seen in the marguerites of the Gournia vases and in such foliate sprays as those which decorate the neck of the jug in Fig. 36.[2] The

Fig. 35, from *J. H. S.* 1903, XXIII, p. 253, Fig. 17.

Fig. 36, from *Mon. Ant.* 1902, XII, Pl. VIII.

marguerites must be regarded as the descendant of the stiff rosettes of Middle Minoan II pottery, Fig. 14 *f, j, k,* and the foliate sprays of the Early Minoan III ornaments in Fig. 7 *b*.

Pure naturalistic patterns which have not occurred before are: (1) the tendril pattern, Fig. 37; (2) the ivy or heartshaped leaf, Fig. 38; (3) the nymphæa, *J. H. S.* 1902, XXII, Pl. XII, 2, and marine designs, including (4) the octopus; (5) the nautilus; (6) the Triton shell, and (7) seaweed. The first two of this naturalistic group with their waving stalks and alternating leaves are examples of the type of design which Riegl regarded as so important a contribution to early ornament (*Stilfragen*, p. 120 ff, Figs. 50 and 52). The fragment from Thera used by him as an illustration dates from the period under discussion. These graceful and decorative designs, which stand in marked contrast, indeed, to the art of Egypt and Assyria, are in accord with

[1] Compare contemporary Thera and Melos vases, Perrot and Chipiez, *Histoire de l'art*, p. 909, Fig. 159, and *Phylakopi*, Pl. XIX, 9 and 10, and Pl. XXVII, 2.

[2] Compare the foliate sprays on Thera vases, Perrot and Chipiez, *op. cit.* VI, p. 908, Fig. 457, and on the Hagia Triada fresco in *Mon. Ant.* XIII, Pl. 10.

the spirit of earlier Cretan art. As far back as the Early Minoan III period, Cretan artists showed an interest in curvilinear design and an unerring sense of decorative effect. Thus this tendril pattern may well be compared with the designs in *Transactions* 1905, Vol. I, Part III, Pl. XXVII, 11 and Pl. XXXIII, 5. The ivy leaf of Fig. 38 is nearer to nature than most of the naturalistic designs of Cretan art, as may be seen by comparing it with the illustration on page 49, which is made from a photograph of a natural ivy, growing today in Greece.

The nymphæa blossoms which predominate in the central band of decoration in the Zakro pit jar (*J. H. S.* 1902, XXII, Pl. XII, 2) have been shown by Mr. Hogarth (*ibid.* pp. 336 and 337) to be an adaptation by the Cretan artists of an Egyptian motive. The Egyptian flower is stiff and for-

Fig. 37, from *J. H. S.* 1903, XXIII, p. 249, Fig. 3.

Fig. 38, from *J. H. S.* 1903, XXIII, p. 252, Fig. 15.

mal, the Cretan graceful and free, though, as Mr. Hogarth points out, the Egyptian type is nearer to an actual form in nature than are the flowing blossoms on the Cretan vase. The nymphæa thus confirms the story told by the lily type of ornament, viz.: that Egypt furnished formal types which the Cretan artists made over into a more naturalistic style of their own.[1]

The Middle Minoan III ornaments from the shrine of the snake-goddess at Knossos have already borne witness to the interest of the Cretan artist in marine life. It is not surprising, accordingly, that in this period pictures of sea life should begin to appear on vases. On Gournia pottery of this period appear the octopus,[2] the nautilus, fronds of seaweed and the conventional pattern called by Mr. Bosanquet sea anemones,[3] while on a vase from Hagia

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[1] Riegl, who studied Mycenaean design before much pottery prior to the late Minoan I period was known, maintained (*op. cit.* p. 45, and *passim*) that the "Mycenaean" genius consisted chiefly in this ability to convert conventional into lifelike designs. Though at the end of his discussion (p. 134) he admitted some few patterns, chiefly marine designs, which were native to "Mycenaean" art. This list must now be materially increased. The originality of Cretan artists, moreover, has been established beyond doubt by such works of art as the Harvester's Vase (*Mon. Ant.* XIII, Pl. I-III) and the faience relief of a wild goat and young from Knossos (*B. S. A.* 1902-1903, IX, Pl. III.)

[2] *Transactions*, Vol. I, No. I, p. 43, Fig. 21, and forthcoming publication.

[3] *J. H. S.* 1904, XXIV, p. 319.

Triada (*Mon. Ant.* 1903, XIII, col. 65, Fig. 52) appear Triton shells against a background of a scale pattern to be considered later.[1]

A thorough and appreciative study of Cretan marine designs has recently been published by Mr. Bosanquet (*J. H. S.* 1904, XXIV, pp. 320-322). It remains here merely to state the fact of the appearance of this class of vases in this period and to point out, for the sake of comparison with later conventionalized marine motives, the lifelike form in which they here occur. An exception to this naturalistic rendering is the decoration of the jug in Fig. 39.[2] The streamers which curve about between the two bands of rock-work pattern

Fig. 39, from *B. S. A.* 1902-3, X, p. 285, Fig. 5.

are generally regarded as fronds of algae. But the artist's desire is not so much to represent sea life as to arrange graceful and harmonious combinations of lines, as may be seen by the insertion of the stop-gap ornament below the spout. The design is accordingly conventional naturalistic.

Another ornament of this class is the leaf pattern in *J. H. S.* XXIII, p. 253, Fig. 16, which is a common pattern in the succeeding period (see, e. g., Pl. III).

On the nymphæa vase from the Zakro pit is a heartshaped leaf conventionally drawn which recalls: (1) Fig. 7 *c* of the Early Minoan III period; (2) the faience pendant of the Middle Minoan III period (Fig. 31); (3) the naturalistic

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[1] The Zakro filler with marine designs in *J. H. S.* 1902, XXII, Pl. XII, 1, I have not included in this period since in general the Zakro houses from which it comes are later than the pits. But too much emphasis cannot be laid on the fact that the divisions between these periods are more or less arbitrary and that the different styles characterizing them overlap. Thus the Zakro bowls with tendril pattern painted in white (Fig. 37) are from the very beginning of this period as possibly the Zakro filler in question may be from the end.

[2] Exactly the same design recurs in Ἐφ. Ἀρχ. 1889, Pl. 7, 19.

ivy leaf of Fig. 38, and (4) the ornament in Fig. 36. No better illustration could be found of the varied sources of Cretan art, than is afforded by a comparison of these patterns. The ivy leaf of Fig. 38 we saw to be derived from nature.[1] On the contrary the type shown in Fig. 7 *c* owed its origin to curved lines drawn with reference to the shape of the field to be decorated.[2] Midway between these two extremes stands the slightly conventional leaf under discussion (the lobes of this leaf are represented by spirals), the highly conventional design of Fig. 31, in which the ivy or heartshaped motive is, as it were, a by-product, and the pattern in Fig. 36. The ornament in the center of the design in Fig. 36 is equivalent to the central lobe of the conventional type of lily (see Fig. 52). Its appearance within the ivy leaf may have reference to one or both of the following facts: the two recurving ends of the ivy leaf suggest the two leaves between which a conventional flower is commonly set (Fig. 51) and its shape is well adapted to the shape of the central space of the ivy leaf. The same facts will account for the outer flowerlike appendage, since it rounds out the ornament in this direction and since flowers are sometimes set between leaves which curve in toward the flower instead of away from it as in nature. (See, e. g., the Egyptian ornament in Fig. 40 and the small flowers in *J. H. S.* 1904, XXIV, Pl. XIII.[3])

Fig. 40, from the *Cairo Museum Catalog*, No. 24071.

Another pattern foretold by the collection of faience objects from the temple repositories of Knossos is the "rock-work" pattern which begins in this period[4] to be used as a means of defining the edges of a zone of ornament. The only case of it I can cite in this period (Fig. 39) may not seem to justify its name, but on an unpublished vase from Gournia, flowers spring from between the lobes of this pattern. It should be connected with the more elaborate honeycombed rock-work of marine designs. Both these conventional representations are combined with perfectly naturalistic ornaments.

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[1] Compare *Phylakopi*, Pl. XVII, 32 and Pl. XIX, 1.

[2] Compare *Mon. Ant.* 1905, XIV, Part 2, col. 487, Figs. 91 and 92.

[3] Mr. Edgar's explanation of this pattern *Phylakopi*, p. 131, that it is derived from the type of pattern in Schliemann, *Tiryns*, Pl. V, seems to me improbable in view of the widespread use of the ivy leaf or heartshaped motive in Mycenaean as in all design.

[4] See below, p. 39.

Finally, in taking leave of the imitative designs of this period we note on Gournia vases the reappearance of the double axe motive.

Some of the non-imitative designs of this period are of the simplest rectilinear and curvilinear geometric type. The ornament on the beaked jug in Fig. 41, which recurs on Gournia vases, is one which it would not be surprising to find

Fig. 41, from *Mon. Ant.* 1905, XIV, col. 687, Fig. 5.

Fig. 42, from *J. H. S.* 1902, XXII, Pl. XII.

on neolithic pottery. Similarly there is to be noted the frequent use of wave lines (Fig. 42). The waved lines associated with dots in Fig. 45 Mr. Dawkins connects[1] with Middle Minoan decorations. A decoration composed of circles on a dotted background which is frequent on Gournia vases is perhaps

Fig. 43, from *J. H. S.* 1903, XXIII, p. 196, Fig. 12.

Fig. 44, from *J. H. S.* 1903, XXIII, p. 251, Fig. 14.

a progenitor of the flower in Fig. 43. If so, here is further evidence for the slight distinction felt between naturalistic and conventional patterns. The quirk remains in use during this period, both as a border motive and as a means of ornamenting the entire surface of a vase. The spirals of this period

[1] *J. H. S.* 1903, XXIII, p. 254.

frequently occur in this form; and their centers are further ornamented with white dots. A shortened form of crescent is a stop-gap ornament used in this period (Fig. 44), though possibly it may have been intended for a representation of the stamens of a flower, since it is used to top the stalks in Figs. 38 and 52 *l*. Here again we have witness of the ingenuity and skill of the Cretan potter in obtaining naturalistic effects out of unpromising material. The whorl used as a background for the lilies in Fig. 42 and as the main scheme of ornament in Fig. 45 is characteristic, both of this and of the succeeding Late Minoan II period. The ripple pattern (see Fig. 32) is as frequent in this as in the Middle Minoan III period.

Fig. 45, from *J. H S.* 1903, XXIII, p. 253, Fig. 18.

By far the most interesting of the non-imitative patterns of this period is the scale pattern in Fig. 46, which recurs on a Gournia *bügelkanne* of this period. This pattern, described by Perrot and Chipiez (*op. cit.* VI, 1, p. 542) as

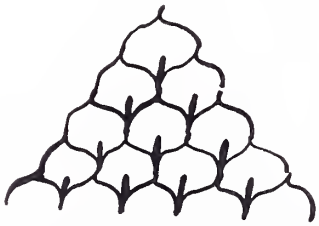

Fig. 46. Pattern used for background in the marine design in *Mon. Ant.* 1903, XII, Part I, col. 65, Fig. 52.

a lozenge-shaped ornament with curved sides, is one of the most characteristic patterns of Mycenaean art. Mr. Edgar (see *Phylakopi*, p. 114 and Pl. XVI, 13, and Pl. XVIII, 2, 7, 14, etc.) thought it began at Phylakopi as a border pattern of trefoil curves, detached or running, but there should not be left out of account the facts: (1) that in Egypt a scale pattern was used to indicate

the plumage of birds as early as the first dynasty;[1] (2) that this pattern acquired central stalks (Fig. 47) as early as the XIIth dynasty,[2] and (3) that this Egyptian type was known in Crete, for it appears on unpublished fragments from the Knossos houses and in the preceding period as a representation of the natural ground in the faience plaque of the wild goat.[3] The change to the more graceful trefoil shape of scale must be ascribed to the artistic taste of Cretan potters. Bits of ivory and paste of this shape have been found both at Knossos and at Spata.[4] Some of the pieces from Knossos were pierced centrally, probably for the insertion of an ornament corresponding to that which generally characterizes the pattern on vases. It is evident that the trefoil curves of these scales were advantageous for inlay, although scales of the simpler Egyptian type were also used for this purpose

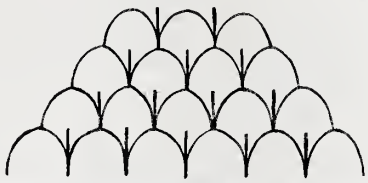

Fig. 47. Pattern used in Egyptian decorative art in the XIIth dynasty.

(*Mon. Ant.* 1902, XII, cols. 93 and 94, Fig. 28). The pattern became a favorite one not only because it was adapted to inlay and to filling large areas of vase surface but also because, in view of its graceful outlines, it made a background not inappropriate for a natural scene. To such an end it is used in *Mon. Ant.* 1903, XII, Part I, col. 65, Fig. 52, and in the steatite relief of an archer in *B. S. A.* 1899-1900, VII, p. 44, Fig. 13.

An excellent example of a mixed design which combines imitative and non-imitative is yielded by the Zakro pit bowl in Fig. 38. Here the decorator started out with a spiral which he drew in the orthodox way until he came to the outer coil which he broadened after the manner of the "rock-work" pattern. One of these lobes he lengthened into a leaf and thus obtained two diverging lines between which he could start a stalk in a semi-naturalistic fashion.

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[1] See *Abydos* I, Pl. LXI, 9. This use of the pattern was not abandoned in Cretan art. See the birds on the seal stones in *B. S. A.* 1903-4, X, p. 56, Fig. 19. Possibly the scale pattern on the skirt of the goddess in *J. H. S.* 1901, XXI, p. 108, Fig. 4, and on the costume of the leader of the harvesters on the well-known Hagia Triada vase (*Mon. Ant.* 1903, XIII Pl. I) where the scales go the wrong way for a coat of mail, may represent festal garments of feathers. But the pattern is sometimes used where it did not represent feathers, e. g., in *B. S. A.* 1900-1901, VII, p. 29, Fig. 9 and *ibid.* 1901-1902, VIII, p. 107, Fig. 65.

[2] See *Beni Hasan* III, Pls. II, 7 and VI, 103.

[3] *B. S. A.* 1902, 3, IX, Pl. III. Compare *Phylakopi*, Pl. XXIX, 7.

[4] *B. C. H.* 1878, II, Pl. XIV, 1.

The flower which he put on the stalk is no real flower. The only truly naturalistic element in the design is the pair of tendrils springing from either side of the stem.

We have already had occasion (p. 27, footnote) to refer to the frescoes of the villa at Hagia Triada, which date from the end of this or from the beginning of the next period. Like the most characteristic class of vases of this period, their designs[1] are highly naturalistic in character. These plant motives—sprays of leaves and flowers—Prof. Halbherr has pointed out[2] to be local rather than Egyptian, so that here again, in the realm of wall decoration, we find evidence for the originality of Cretan artists.

Late Minoan II.

We come now to the second division of the Late Minoan II period. Again no break in continuity separates this from the preceding period. On the contrary, here, more than elsewhere, the transition from one style to another is gradual. The vases and vase fragments of this period might be arranged in a series, the first member of which would be scarcely distinguishable from the vases of the Late Minoan I period and the last from the Late Minoan III period. In fact, it seems scarcely possible to include Fig. 48 and Pl. III in the same class, and yet they belong to well defined groups which, as a whole, could not be put into any other period.

The technique of vases of this period differs but little from that of the foregoing period except that the decoration is now applied in the dark glaze paint alone without superadded white.

Characteristic of this period are large decorated amphorae and pithoi, standing, some of them, as high as 1.20 m. (Pl. II). The habit of decorating large vessels gives rise to a showy and, as Dr. Evans terms it, a quasi architectonic style, the beginnings of which may be traced in the preceding period, but the full culmination of which takes place in this epoch. There is observable in this style, especially towards the end of the period, a *horror vacui* from which Late Minoan I vases were free. Parallel to this tendency toward stop-gap ornaments and a "close" style is to be noted a change in the syntax of designs. Designs are now frequently divided up either vertically (Pl. III), obliquely (*J. H. S.* 1904, XXIV, Pl. XI), or horizontally (*Prehistoric Tombs*, p. 158, Fig. 143). However, this period at its best, or as a whole is not decadent. Fig. 50 and Pl. II show the rare artistic skill which potters display, both in inventing designs and in adapting them to the field of the vase.

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[1] See *Mon. Ant.* 1903, XIII, Part 1, Pl. VII-X.

[2] *Ibid.* cols. 55-60.

Every class of design except complex non-imitative is represented in the decoration of this period. In contrast with the designs of the preceding period it should be noted: (1) that the bulk of the designs has now shifted from the pure naturalistic to the conventional naturalistic class, and (2) that combinations of different kinds of design are more frequent. With these remarks by way of preface, we may look at these designs class by class.

Figs. 48 and 49 may be cited as evidence that pure naturalistic designs are not wanting in this period. The pea design (Fig. 48) from the northwest building at Knossos is typical. The shape of the pea blossoms has been truly rendered. The stalks curve upward after the manner of a growing vine and

Fig. 48, from *B. S. A.* 1902–3, IX, p. 117, Fig. 72.

yet the artist has not cared to draw the plant so accurately that the spectator could see at a glance what species it was. The realism here is again of a limited kind. Leaves and tendrils are omitted from among the blossoms and the whole plant is set on the same leafy stalk from which a palm or papyrus plant is commonly pictured as springing.[1] The same observation may be made of the designs in Fig. 49. These lanceolate leaves are lifelike and are set gracefully on their stems, but they grow as no leaves ever grew.

Of the marine designs in Fig. 50, the Zakro filler in *J. H. S.* 1902, XXII, Pl. XII and the vases regarded by Mr. Bosanquet as Cretan importations into Melos (*J. H. S.* 1904, XXIV, Pl. XII), little further comment is necessary. It is important, however, to point out the skill in composition which they display. In the filler bottle from Palaikastro, for example, the wider space

[1] This leafy stalk goes back to the Middle Minoan II period. See Pl. I.

on the shoulder is filled with a design of rock-work and seaweed enclosing a large star, while to the narrowing field below are nicely adapted the tapering murex or Triton shells.[1] The star on the Zakro filler Mr. Hogarth thinks could not be regarded as a starfish since it is treated much more conventionally than the other forms of marine life on the same vase.[2] This reason for his view does not seem conclusive inasmuch as it is characteristic of this period to combine pure naturalistic with conventional naturalistic designs. There is, however, good evidence to show that the star was a conventional or rather symbolical design. On a larnax from Palaikastro (*B. S. A.* 1901–2, VIII, Pls. XVIII and XIX) of the succeeding period, it occurs in one design without forms of marine life and together with the double axe and horns of worship. Moreover, the eight-rayed star and the double axe are often associated in the signs which mark the blocks of the Knossos palace (*B. S. A.* 1903-1904, X, p. 29). In explanation of the design of the Palaikastro larnax Sig. Savignoni (*Mon. Ant.* 1905, XIV, Part 2, col. 575) says that the

Fig. 49, from *J. H. S.* 1903, XXIII, p. 195, Fig. 11.

Fig. 50, from *B. S. A.* 1902–3, IX, p. 311, Fig. 10.

bird stands for the human soul, the rock-work pattern around the border for the river encircling the world, and the star and double axe for the divine ruler of light above. Without admitting all of his theory, we may yet attribute to the star religious significance. On the Zakro and Palaikastro vases it seems to have been chosen not only for its symbolical meaning but also for its artistic value in the design.

The most frequently repeated of the conventional naturalistic patterns of this period is the "leaf pattern" (see Pl. III). One reason for the popularity

[1] Compare Bosanquet, *loc. cit.* p. 321.
[2] *J. H. S.* 1902, XXII, p. 334.

of this ornament was doubtless that it was easy to draw. A potter must have been able to put the pattern in very rapidly with a brush, especially in narrow areas like the band in Pl. III where there were outer limits to help to keep the pattern even. Similarly long narrow moulds for this pattern, into which the metal worker would hammer rims or border patterns on his sheets of bronze or gold, cannot have been difficult to make.[1]

Groups of three leaves, generally hanging in pendant form, occur frequently in this period both as a main decorative motive and as a stop-gap ornament (Fig. 67, *Athen. Mitt.* 1886, XI, Pl. III; *J. H. S.* 1903, XXIII, p. 192, Fig. 10) and among the imported fragments at Phylakopi (*Phylakopi*, Pl. XXXI, 2).[2]

Fig. 51, from *B. S. A.* 1902–3, IX, p. 311, Fig. 9.

In Fig. 52 appear various forms of conventional and conventionalized flowers which characterize this and the following period.[3] The papyrus blossom (*m*), which is still quite close to the Egyptian prototype, and the lily (*k*), which is characteristic of Late Minoan I pottery, seem to have been the types from which most of these forms sprang, though, as might be expected, the types have, in many cases, become confused. The utter disregard for consistency which Mycenaean potters sometimes display is well illustrated in Fig. 52 *l*. The presence of rosettes within the coils of the two petals must be explained by the habit of finishing spirals with rosettes, while the

[1] See *Prehistoric Tombs*, p. 122, Fig. 116, and Schliemann, *Mycenae*, p. 320, Nos. 482 and 483.

[2] Compare the trefoils on the Middle Minoan II sherd in *Phylakopi*, p. 149, Fig. 130.

[3] *a*, *c*, *e*, *f* and *h* are from the succeeding period.

small blossom between the flower and leaf is nothing else than a pea or bean blossom (compare Fig. 48). If the semicircular fields of ornament in Pl. III be looked at from the side, it will be seen that the central motive which Dr. Evans has connected (*Prehistoric Tombs,* p. 160) with the double axe is similar to that in Figs. 52 *j* and 56. It should therefore be regarded as a conventional flower. A frequent border pattern built up around the same

Fig. 52. a, c, e, f, h and m are from *J. H. S.* 1903, XXIII, p. 192, Fig. 10 and p. 197, Fig. 13; b, d and g are from *Prehistoric Tombs,* Pl. C, opp. p. 156, Pl. CI, opp. p. 157 and p. 158, Fig. 143; i, j and l are from pottery found in 1900 in Knossos houses by Mr. D. G. Hogarth.[1]

papyrus core is shown in Fig. 53.[2] During this period the tendency is gaining ground to fill in the field of the flower with lines (Fig. 52, *b, d,* and *i*). This tendency develops parallel to the *horror vacui* which indicates not only a dearth of artistic inspiration but also the decline of imitative design. For

[1] For permission to publish these last designs and Figs. 53, 56, 58, 59 and 60, I am indebted to the courtesy of Mr. Hogarth.

[2] Compare the design in the upper right corner of the lower mould in Schliemann, *Mycenae,* p. 107, No. 162.

the potter, in filling the empty spaces between the main lines of the design, shows that his thought is not on the ornament he applies but on the field he decorates. The abundance of stop-gap ornaments in this and the succeeding period would have foretold the return of a geometric style of ornament even if that style had not been known before the art of the bronze age was revealed.[1]

The insertion of flower types within heartshaped leaves (Figs. 54 and 55) is frequent in this as in the preceding period (compare Fig. 36). The explanation of the origin of these patterns given on page 30 will be confirmed by a comparison of them with Fig. 52 *l*. The running "ivy leaf" pattern in Fig. 56[2] is to be explained in the same way, except that in this case the recurving ends of the ivy leaf pass into the ends of the flower itself, not into the leaves below it.

Fig. 53. Design on a Sherd from a Knossos House.

The rock-work pattern might in this period be quite as well classed with the non-imitative as with the imitative designs, for it is used in the majority of cases without any thought of picturing the natural surface of the ground. Most frequently it is employed for decorating the necks of vessels (*Prehistoric Tombs*, Pl. C, opp. p. 156 and Pl. CI, opp. p. 157), but it is also used in the framework of a design.[3] The habit of using this pattern for framing a design was doubtless formed in the school of fresco painting (see *Phylakopi*, Pl. III). It seems to have become so fixed that decorators continued to apply it in places where it was quite inappropriate, as on the bodies of animals. Thus in the Tiryns bull fresco (*Tiryns*, Pl. XIII, opp. p. 352) it is applied as if the outlines of the bull's body were to be the frame for a picture.[4]

Among the non-imitative patterns, spirals, dots, and festoons continue in use during this period. The spiral is frequently enriched by a rosette

[1] Compare R. M. Dawkins, *B. S. A.* 1902-3, IX, p. 316.

[2] Compare *Prehistoric Tombs*, p. 158, Fig. 143.

[3] Compare the later larnax from Palaikastro in *B. S. A.* 1901–2, VIII, Pls. XVIII and XIX.

[4] Compare also the horses in *Myk. Vas.*, Pl. XLI. Curiously enough this method of decorating animals' bodies persisted until the sixth century when it appears on the Clazomenae sarcophagi (e. g., *Ant. Denk.* I, 44).

within its volute (*Prehistoric Tombs*, p. 69, Fig. 75 and Pl. C, opp. p. 156). A row of spirals to which horns are added for the sake of making a closer pattern[1] is frequently used for a border decoration (Pl. III). The quirk, which has occurred in every earlier period and which recurs in the next period does not, so far as noticed, occur now.

Both of the scale patterns described on pp. 32 and 33 reappear in this period. On unpublished sherds found by Mr. Hogarth in 1900 near the Knossos palace

Fig. 54, from *Prehistoric Tombs*, p. 156, Fig. 141 b.

Fig. 55, from *J. H. S.* 1902, XXII, p. 192, Fig. 10.

Fig. 56, from a Sherd from a Knossos House.

occurs the counterpart of the Egyptian scale pattern in Fig. 47 and again a pattern similarly reticulated but embellished by large dots instead of by stalks. Especially characteristic of this period is the other type of reticulated pattern, examples of which with various central ornaments are shown in Figs. 57 to 59.[2] It will be noticed that the favorite ornament is a conventional flower, which helps to give that quasi naturalistic effect in which Mycenaean artists delighted. The trefoil arches of this pattern are used in rows for a

[1] See Edgar, *Phylakopi*, p. 130.

[2] Compare *Myk. Vas.*, Pl. VI, 32, XII; Pl. XXVII, 217; and Pl. XXXII, 306, 307, and 308.

border decoration (Fig. 59), and separately in floral decoration[1] to represent rocks or the surface of the ground. Yet in such design the use of the ornament seems due in part to the fact that, because of its shape, it made a useful motive for filling in the semicircular space left between the spreading leaves of two plants.

On faience plaques from Knossos, Mycenae, and Tel-el-Yehûdiyeh in Egypt occurs a sign like the late form of the Greek letter Alpha (*B. S. A.* 1899-1900, VI, p. 42; *Prehistoric Tombs*, p. 110, footnote, and *J. H. S.* 1904, XXIV, p. 328). This sign was evidently taken over as a decorative motive for pottery of this period (see Fig. 60). In some cases the pattern seems to have been confused with a flower type. The combination of this motive with spirals shown in Fig. 60 is repeated on Naukratis ware (*Naukratis*, II, Pl. IX, 5).

Fig. 57, from *Athen. Mitt.* 1886, XI, Pl. III.

Fig. 58. Design on a Sherd from a Knossos House.

Fig. 59. Design on a Sherd from a Knossos House.

The checkerboard pattern which marks off the field of ornament in Pl. III is noteworthy for two reasons: first, it resembles the checkerwork in the architectural fragment of the "miniature" fresco in *J. R. I. B. A.* 1903, X, third series, p. 113, Figs. 15 and 21, which has already been compared[2] to Egyptian monuments of the Vth and XIIth dynasties,[3] where generally, however, such bands represent the architectural framework of a door, and secondly, it forecasts a characteristic decoration of the Cretan geometric style.[4]

Fig. 61 shows a mixed design of this period. It is made up of spirals, tendrils, and groups of blossoms combined in much the same way as were the designs in Figs. 25 and 38.

During the period of the great palaces at Knossos and Phaistos many arts besides vase painting must have flourished. To the skill of the worker in

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[1] On the reverse of the jar in Pl. II.

[2] See Evans in Archaeological Report of the Egyptian exploration fund 1899-1900, p. 60 and *Prehistoric Tombs*, p. 160, footnote.

[3] *Deshasheh*, Pl. XXVII; *Ptahetep* I, Pl. XXa; *Beni Hasan* I, Pl. XXXVII and *ibid.* IV, Pl. XXI.

[4] *Athen. Mitt.* 1903, XXVIII, p. 159 and Pl. XVII, opp. p. 144.

metal the bronze vessels from the northwest building at Knossos and the swords from the Zafer Papoura graves bear witness. The more noteworthy ornaments on these, the "leaf pattern" (*B. S. A.* 1902-1903, IX, p. 124, Fig. 77), the ivy leaf (*ibid.* p. 126, Fig. 80), a conventional lily (*ibid.* p. 127, Fig. 81),

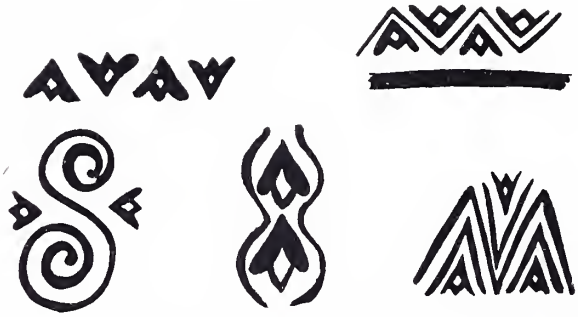

Fig. 60. Designs on Sherds from Knossos Houses.

and spirals (*Prehistoric Tombs*, p. 56, Fig. 58) are frequent in vase painting. The design of wild goats and lions on the agate sword handle from a Zafer Papoura tomb (*Prehistoric Tombs*, p. 57, Fig. 59) shows more affinity for the

Fig. 61, from *B. S. A.* 1903–4, X, p. 206, Fig. 4.

gem cutter's art, in which animals are frequent subjects. The ground of this scene, however, is indicated by a conventional representation of rocks, similar to that in fresco painting, from which the more cursory representation of the vase painter was adopted. Mr. Evans thinks that the "leaf pattern" was taken[1] over by potters from metal vases. This is the natural course of events,

[1] *Prehistoric Tombs*, pp. 121 and 122.

that less costly products should imitate the more costly, yet the ease with which this pattern can be applied with the brush and the fact that it appears on a Zakro vase in the Late Minoan I period make it seem possible that its use in ceramic art is as ancient as its connection with metal vases.

In the Zafer Papoura graves near Knossos, considerable quantities of jewelry were found of the types known at Phaistos, Mycenae and elsewhere. In some cases (e. g., grave 36, *Prehistoric Tombs*, p. 58, Fig. 60) these jewels were found in graves assigned to the Late Minoan II period. But since the majority of these gold ornaments belongs in the Late Minoan III period, they will be considered later as an undivided group.

Most closely akin to the ceramic art in method is the art of fresco painting, especially during this Late Minoan II period. The larger vases presented as extended a field for decoration as that occupied by fresco pictures. Such jars as that in Pl. II were very likely made to match the decoration of the room in which they stood. Further, the smaller patterns on "miniature" frescoes, borders, and other small areas of painted plaster offer many analogies to the patterns used on vases.

On Late Minoan II frescoes appear purely naturalistic motives, like the lily (*B. S. A.* 1901-1902, VIII, p. 92), sprays of leaves (*ibid.* p. 110), grasses (*B. S. A.* VII, p. 59), the ivy leaf (*J. R. I. B. A.* 1902, p. 129, Fig. 71) and marine designs (*B. S. A.* 1901-1902, VIII, p. 58), as well as conventional naturalistic designs like marguerites (*J. R. I. B. A.* 1902, Pl. I), papyrus blossoms (*ibid.* p. 125, Fig. 63), the leaf pattern (*ibid.* p. 123, Fig. 50), heartshaped leaves with flowerlike appendages like those in Fig. 36 (*ibid.* p. 117, Fig. 40, p. 125, Fig. 62 and p. 130, Fig. 81) and several designs like the double axe and horns of worship (*ibid.* Pl. II). Among the non-imitative designs are the scale patterns of Figs. 57–59 with various central ornaments (*ibid.* p. 123, Fig. 52 and p. 128, Fig. 69), spiraliform ornaments of different types, including the "horned spiral" (*ibid.* p. 121, Figs. 45 and 46)—which may well have arisen in the effort of the fresco painter to adapt a spiraliform design to the square field of a ceiling or wall—the spiral with a rosette center (*ibid.* p. 120, Fig. 43), the checkerboard pattern (*ibid.* Pl. II), and various simple linear patterns, known on Late Minoan I and Late Minoan II vases.

Thus the repertoires of the potter and the painter of frescoes are largely identical. The most characteristic patterns of the vases of this period, like the scale pattern and the ivy leaf types, are conspicuous in the designs of frescoes. Only one pattern on painted plaster—the tooth ornament—(*ibid.* p. 127, Figs. 64–67) does not appear on vases. It is quite likely that for palace products at least, the same artists were employed to decorate both walls and vases. However that may be, it is impossible to ascribe to either vases or fresco painting a predominant influence in setting the style of decoration.

Late Minoan III.

And now, finally, we come to that period of "Mycenaean" culture widely known from other sites than Crete. During this period a style of ornamentation prevailed, which, compared with that used in preceding periods, is lifeless and uninteresting, but which, nevertheless, has given to most people their idea of Mycenaean art.

In this period are included two groups of vases. The one stands at the very beginning of the period and marks the transition from Late Minoan II style; the other stands at the end of the period and marks the lowest ebb of Mycenaean art just prior to the rise of the geometric style. The one group includes pottery from block γ in Palaikastro (see table), from the Zafer Papoura graves at Knossos, and from the necropolis at Phaistos (see table). It is charac-

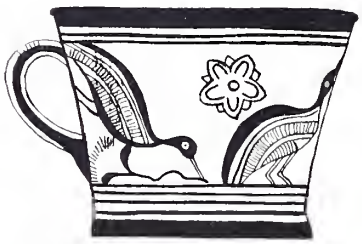

Fig. 62, from *B. S. A.* 1902–3, IX, p. 318, Fig. 17.

terized by the "close" style,[1] the beginnings of which go back to the preceding period (see p. 34). The other group is made up largely of the ceramic remains of the "squatter" civilization at Knossos and Palaikastro. It is marked by the frequency of the degenerate octopus ornament. In this later period there is a falling off in the quality of both clay and paint. The *bügelkanne* is again a common shape.[2]

Few pure naturalistic designs are in use during this period. The most lifelike of the decorative motives which occur are fishes and birds (Fig. 78, *Mon. Ant.* I, Part 2, Pl. I; *J. H. S.* 1903, XXIII, p. 198, Fig. 14; *Mon. Ant.* 1905, XIV, Part 2, Pl. XXVIII; *Myk. Vas.* Pl. XIV, 87). Both of these motives have occurred occasionally in earlier Cretan art. A fish is the main decorative motive on a Middle Minoan II vase in *Mon. Ant.* 1895, VI, Pl. IX, 8, and on a cup of the same period from Gournia. It figures again on a Knossos vase-fragment (*B. S. A.* 1902–3, IX, p. 115) of the Late Minoan II style and in the frescoes and among the faience models of the later palace. Birds also are not unknown in earlier art (*J. H. S.* XXIII, p. 198, Fig. 14). But nowhere

[1] *B. S. A.* 1902-3, IX, pp. 316 and 317.

[2] See *Prehistoric Tombs*, p. 121.

in earlier art do these motives assume the prominent position in the potter's repertoire which they hold during this period. In view of the frequency with which they appear and of the unnatural juxtaposition into which they are brought (e. g., *Mon. Ant.* 1891, I, Part 2, Pl. I and *ibid.* 1905, XIV, Pl. XXXVII) they may be regarded as symbolical of the heavens and of the

Fig. 63, from *B. S. A.* 1902–3, IX, p. 315, Fig. 14.

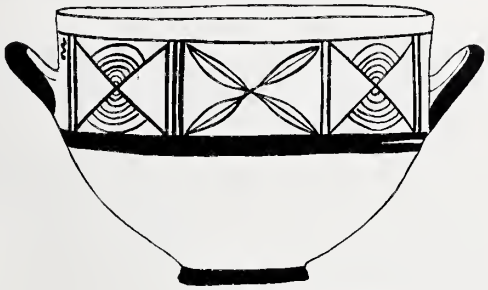

Fig. 64, from *B. S. A.* 1902–3, IX, p. 319, Fig. 19.

sea.[1] Something of this symbolical meaning may have still been attached to birds and fishes in the geometric period when they again appear in the midst of a purely geometric style (*Athen. Mitt.* 1903, XXVIII, Pl. III,—opp. p. 104,—2; Pl. VI, 2—opp. p. 105—and Pl. XXXII, 2,—after p. 192,—etc.).

Fig. 65, from *B. S. A.* 1902–3, IX, p. 319, Fig. 18.

The class of design most characteristic of this period is the conventionalized naturalistic class. In Fig. 52, *d, f, g, h* and *j*, are shown various shorthand methods of rendering flowers. The most naturalistic Late Minoan III flower-type is Fig. 52 *h*, which is not far removed from the lily in Fig. 1. In the next stage of degeneration, the row of stamens becomes a row of dots, while the center of the flower is indicated by curving cross-lines (Fig. 52 *j*) or by more

[1] Compare the above mentioned view of Sig. Savignoni in *Mon. Ant.* 1905, Part 2, XIV, col. 572 ff.

dots (Fig. 52 *g*). Finally this cursory rendering of flowers became so habitual with the potter that whenever two lines in his design made an angle, he could not resist filling in the angle with cross-lines as if it were a bud (Figs. 63–65, 'Εφ. Αρχ. 1904, Pl. I, and *Prehistoric Tombs*, p. 22, Fig. 14, etc.). In Fig. 65

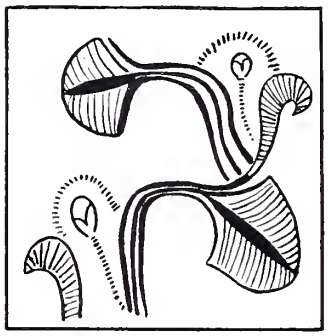

Fig. 66, from *Mon. Ant.* 1891, I, Part 2, Pl. I.

dots are retained to indicate stamens. The papyrus type of flower is sometimes clearly distinguishable from the lily (Fig. 66, *Prehistoric Tombs*, p. 91, Fig. 102, and *Mon. Ant.* 1891, I, Part 2, Pl. I, 3). The smaller flowers between the papyrus leaves in Fig. 66 will be recognized as the equivalent of the central ornament in the semicircular designs of Pl. III. The ends of this

Fig. 67, from *B. S. A.* 1902–3, IX, p. 214, Fig. 5.

Fig. 68, from *Myk. Vas.* p. 23, Fig. 13.

ornament are in one case joined below in a meaningless circle, while the stamens, leaves and stem are indicated in the linear method of the period.

To the conventionalized naturalistic class belong also the debased forms of octopus and Triton shell prevalent in this period. In Fig. 67 the once life-like octopus has been reduced "to a mere symmetrical center to a continuous series of curves."[1] The ornament in Fig. 68 is generally regarded as a debased form of murex or Triton shell.[2]

[1] *Prehistoric Tombs*, p. 127.

[2] See Schliemann, *Mycenae*, p. 138 note; Fabricius in *Tiryns*, p. 349; Hogarth, *J. H. S.* XXII, p. 337 and Fig. 16, and Evans, *Prehistoric Tombs*, p. 128.

Finally, among the conventionalized naturalistic designs of this period should be mentioned the "rock-work" pattern which is used both to indicate the surface of ground, as in *Prehistoric Tombs*, p. 91, Fig. 102, and to fill in space, as in *Mon. Ant.* 1905, etc. In the latter case it receives the same cross-lined, geometric style of treatment as that which flowers of this period undergo.

Of the non-imitative designs with which we have become familiar only a few simple motives remain in use. These are the spiral, the checkerboard pattern (*Mon. Ant.* 1905, XIV, Part 2, Pl. XXXVII), and the quirk. The linked spiral design in *Prehistoric Tombs*, p. 91, Fig. 102a, is evidently, as Mr. Evans has pointed out (*ibid.* p. 90), an adaptation of designs on contemporary Egyptian chests and ceilings.

Among the important objects belonging to this Late Minoan III period are numbers of small gold and paste ornaments closely analogous to those which have been found at Spata, Dimini, Ialysos, and Mycenae (see table, opp. p. 50). These finds come mainly from the Zafer Papoura graves near Knossos and from the necropolis at Phaistos. The motives chiefly used for their decoration are the following: a pair of nautili similar to those which appear on Late Minoan I vases, arranged to fill a rectangular area (*Mon. Ant.* 1905, XIV, Part 2, col. 595, Fig. 59, and *Prehistoric Tombs*, p. 130, Fig. 119); butterflies (*Mon. Ant.* XIV, Part 2, col. 601, Fig. 66); flowers (*ibid.* col. 597, Fig. 61, and *Prehistoric Tombs*, p. 76, Fig. 85, and p. 130, Fig. 119); pairs of spreading petals (*Mon. Ant.* 1905, XIV, Part 2, col. 599, Fig. 62); rosettes (*ibid.* and col. 601, Fig. 63, and *Prehistoric Tombs*, p. 130, Fig. 119); conventionalized lilies (*Mon. Ant.* XIV, Part 2, col. 609, Fig. 78);[1] leaves of the ivy or heartshaped type with central ornaments and triangular attachments to fill the intervals between the leaves (*ibid.* col. 611, Fig. 80, and col. 614, Fig. 81); spirals with similar attachments (*ibid.* col. 609, Fig. 78); an ornament consisting of a single pendant spiral or curl (*ibid.* col. 614, Fig. 82); lobes of the scale pattern of Fig. 62 (*ibid.* Fig. 83); and the sacred shield (*Prehistoric Tombs*, p. 44, Fig. 41).

The designs of these small ornaments are exactly those with which we have become familiar on vases. Only one or two, the pendant curl and the butterfly, are foreign to the potter's repertoire of patterns. The prevalence of these designs in these minor arts of gold and paste ornaments may have aided in fixing the type of such motives as the conventional lily, the ivy leaf and the nautilus. Goldsmiths are not so liable to careless workmanship as potters. In some cases a reacting influence from the designs of jewelry may have been

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[1] Compare Schliemann, *Mycenae*, p. 183, No. 278 and p. 199, No. 303, and *B. C. H.* II, Pl. XV, 3, 4 and 5.

exerted on vases. The strings of buds in *Myk. Vas.* Pl. XXXIV, 336, look like the necklace of gold beads in the form of buds which is shown in *Mon. Ant.* 1905, XIV, Part 2, col. 597, Fig. 61.

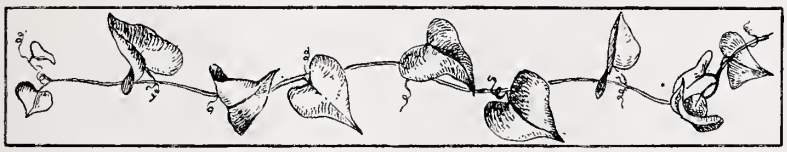
Conclusion.

The designs which we have examined record some two thousand years of artistic development. At the beginning of this period man's instinct for balance, rhythm, and harmony is satisfied by the simplest linear geometric ornament, notably by the zigzag. The established use of the brush is influential in the transformation of this rectilinear into curvilinear ornament and many experiments in curvilinear decoration follow in the Early Minoan III period. Among them are motives which look like natural objects and gratify the primitive instinct for imitative art. Conventional naturalistic designs, thus casually begun, continue throughout the Middle Minoan II period with growing realism; but more typical now is non-imitative ornament, which includes a large variety of simple motives as well as complex designs constructed for the sake of balance, rhythm, and harmony. Some of these non-imitative designs reach a high degree of artistic merit, while others are crude and fantastic. The prevalence of this class of design is parallel to the use of polychromy. In the Middle Minoan III period pure naturalistic designs supersede non-imitative designs. Their introduction is to be attributed in part to Egyptian influence, but Cretan designers, trained by long practice in artistic arrangement of line and color, are able to secure more naturalistic as well as more decorative effects than Egyptian artists. This change to a naturalistic style is effected on pottery which for technical reasons must be regarded as the direct descendant of Middle Minoan I and II ware. Moreover, the non-imitative patterns of preceding periods are frequent still, so that no violent break can be assumed before the introduction of the naturalistic style. In the succeeding Late Minoan I period the same naturalistic style prevails, and various new ways of combining naturalistic motives are invented. A large stock of non-imitative motives inherited from the early and middle periods are also in use. In the period of the great palaces at Knossos and Phaistos, conventional and conventionalized flowers replace, in part, naturalistic motives. The beginning of a tendency to divide up the fields into small areas is observable. In the Late Minoan III period, designs are neither adapted from nature nor invented, but instead debased forms of naturalistic motives are unintelligently copied. The artist's chief concern is to pack with ornament the panels or zones into which he divides his fields. Such a system of decoration not only indicates lack of artistic originality but also heralds the approach of a purely geometric style.

The statement of Professors Furtwängler and Löschcke quoted on page 5 had reference, it will be remembered, to vases with lustrous paint. This class

of vases is in general equivalent to the vases of the three Late Minoan periods, when naturalistic designs prevailed over every other kind of ornament. Consequently the statement that these designs were in the main naturalistic is quite in accord with what we have found to be true. But the derivation from weaving of the non-imitative motives used during this period is not now plausible, for it is clear that the quirk, the ripple motive, the festoon, and most, in fact, of the non-imitative patterns, were native to vases. Moreover, unless due importance is attached to the earlier, non-imitative designs, the most characteristic features of "Mycenaean" ornament will not be rightly understood. For the skill which artists of the Late Minoan periods display both in arranging naturalistic motives with a maximum of decorative effect and in combining imitative and non-imitative motives with a maximum of lifelike effect, must be attributed to their inheritance from earlier periods when designs were made solely for the sake of balance, rhythm, and harmony of line.

EDITH H. HALL.



		151.	similar to those found in the Vapheio, Ialysos, Dimini, Spata, etc., tombs.		Vases from Nauplia.	*Ibid.*, Pl. XV.
	Royal tomb (niche).	*Ibid.*, p. 141, Fig. 122.			Vases from Mycenæ.	*Ibid.*, Pls. XXIII-XLIII.
	"Squatter" houses.	Mackenzie, *J. H. S.* XXIII, p. 197.			Vases and gold, glass, paste, and ivory ornaments, from Spata.	Haussoulier, *B. C. H.* II, pp. 185-228, Pls. XIII-XIX.
	Phaistos, late deposits.	Pernier, *Mon. Ant.* XII, col. 117, and Pl. VIII, 4.			Vase-fragments from Tel-el-Amarna, Egypt (XVIIIth and XIXth dyns.).	Petrie, *Tel-el-Amarna*, Pls. XXVI-XXX.
	Necropolis.	Pernier, *Mon. Ant.* XIV, cols. 557-577, Figs. 42-46, Pls. XXXVII and XXXVIII.			Vase-fragments from Argive Heræum.	*Argive Heræum* II, most of Pls. LII-LV.
	Lilianá tomb.	*Ibid.*, col. 637, Fig. 107 and Figs. 110-112.				
Late Minoan III.	Ligortino tomb.	*Ibid.*, col. 657, Fig. 120.				
	Palaikastro (block γ)	Dawkins, *B. S. A.* IX, p. 315, Figs. 13-19.				
	(block π)	Dawkins, *B. S. A.* X, p. 212 ff., Fig. 5.				
	Anoja Messaritica.	Orni, *Mon. Ant.* I, cols. 205-208, Pl. I, 1 and 3.				
	Milatos.	*Ibid.*, cols. 208-9, Pl. II, 1 and 2.				
	Pendamodi.	*Ibid.*, cols. 209-11, Pl. I, 2.				
	Artsa.	Xanthoudides, Ἐφ. Ἀρχ., 1904, col. 18, Fig. 2.				
	Moulianá.	*Ibid.*, col. 27, Fig. 6, and Pls. I and III.				
	Siteia Harbor.	*Ibid.*, col. 54, Fig. 16.				
	Dictæan Cave.‡	Hogarth, *B. S. A.* VI, p. 103, Figs. 31 and 32.				

* Mr. Evans regards this deposit as transitional between Early Minoan III and Middle Minoan. See *Essai de classification*, p. 7.
† Fig. 4, 3, Mr. Dawkins now classes with Middle Minoan II vases. See *B. S. A.* 1903-4, X, p. 193.
‡ In another cave on the east coast of the Dictynnean peninsula in western Crete, Late Minoan III sherds were found in abundance by Mr. J. L. Myres, and later (in 1905) by Mr. T. L. Shear and myself.

PLATE I.

Two decorated jars of the Middle Minoan II period. From Mon. Ant., 1905, XIV, Part II, Pl. XXV.

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Two Decorated Jars of the Middle Minoan II Period

From *Mon. Ant.* 1905, XIV, Part 2, Pl. XXXV.

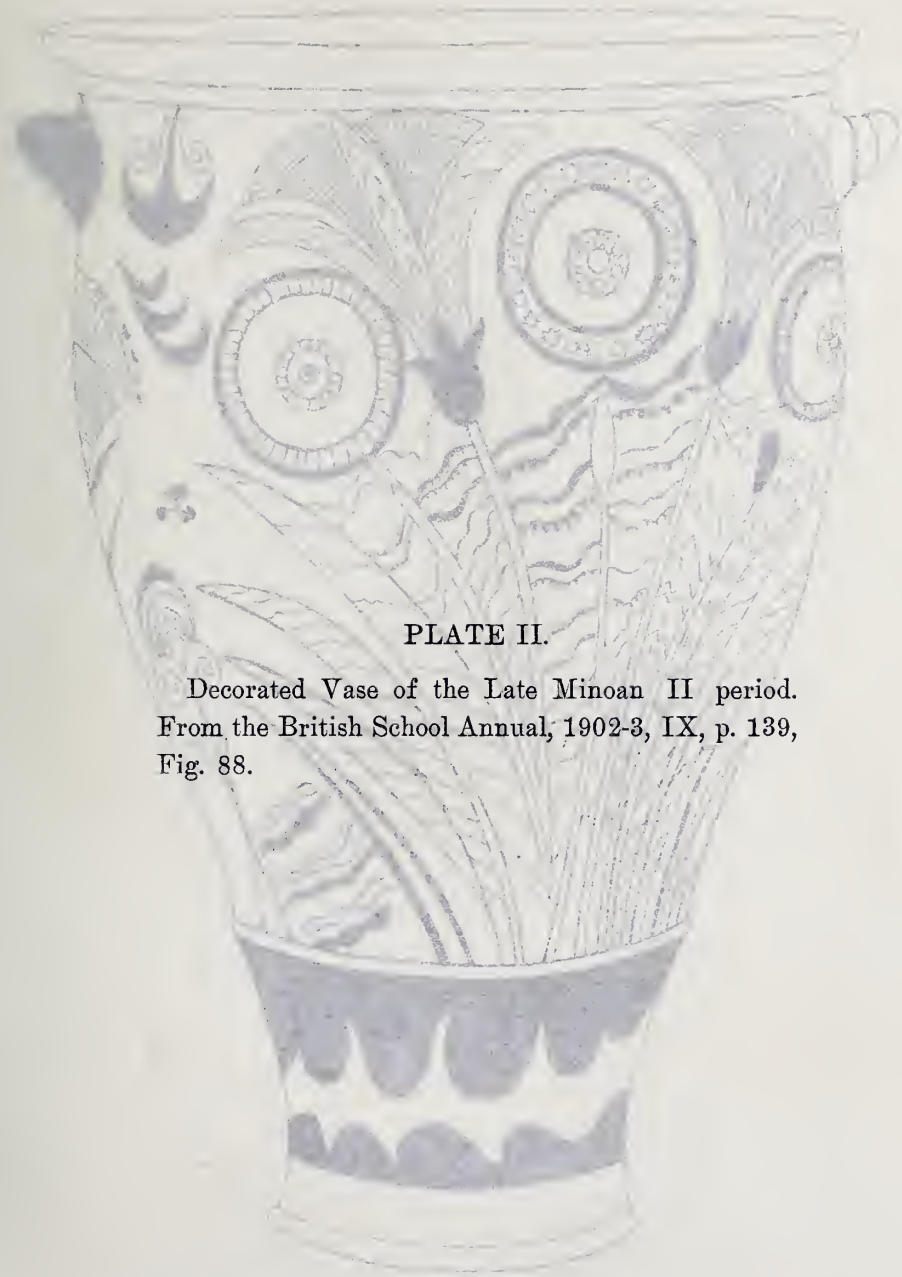

PLATE II.

Decorated Vase of the Late Minoan II period. From the British School Annual, 1902-3, IX, p. 139, Fig. 88.

Decorated Vase, Late Minoan II Period.

Reproduced from the *British School Annual*, 1902–3, IX, p. 139, Fig. 88.

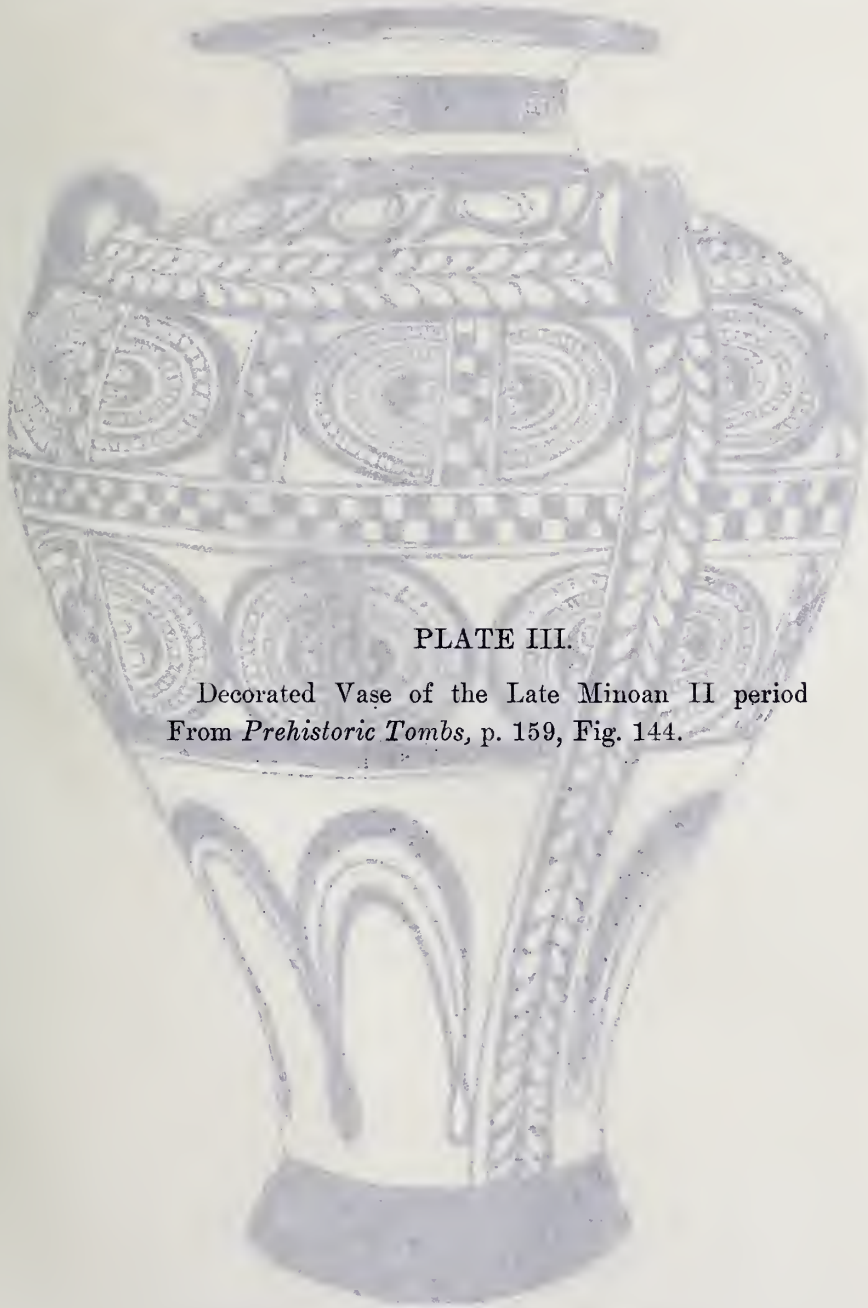

PLATE III.

Decorated Vase of the Late Minoan II period
From *Prehistoric Tombs,* p. 159, Fig. 144.

Decorated Vase of Late Minoan II Period.

From *Prehistoric Tombs*, p. 159, Fig. 144.

SOME NOTES ON XOCHICALCO.

Every one who goes to Mexico visits Xochicalco, riding down thirteen miles from Cuernavaca, by the Indian village of Tetlama, to the ruins. There one sees a number of shapeless mounds and some terraces, scattered over the hills, and a low, sculptured building which at first sight perhaps does not appear especially interesting, but which, when it comes to be thoroughly studied and understood, may prove to be of great importance. The reliefs must certainly record some striking event, just as on the façades of European cathedrals, the Biblical scenes and companies of saints recall the traditions of past ages.

Although this sculptured edifice has been well described and figured by Dr. Eduard Seler,[1] and also by Señor Antonio Peñafiel,[2] there remain some points worth noting that have escaped the attention of these writers. The truth is that however careful an observer may be, there are always details which evade the eye, but can be seen by those who follow with the advantage of having drawings and descriptions, and in this way interesting facts may often be added even to the most careful descriptions. Dr. Seler's description is admirably accurate and so are his drawings of the separate details, and his interpretation of the date glyphs, but he gives a drawing of only one half of the east side as a specimen in addition to photographs of three sides, which, being of a small size, leave many of the details obscure. Señor Peñafiel has plates of all the sides, which are excellent for the general impression, but the details are not altogether correct. These notes and illustrations are the result of five days spent (in April, 1905,) in carefully comparing the Peñafiel plates with the sculptures, and making fresh drawings of some parts of the terrace, in addition to sketches and photographs taken during visits in 1894 and 1897. Much remains still to be done in order to complete the copying of these sculptures, and I did not have time to study the building as a whole, or the scattered fragments of carved stone with which it is surrounded.

In order to unravel the meaning hidden in every detail of the reliefs of Xochicalco, it is necessary to have them presented with absolute accuracy

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[1] *Gesammelte Abhandlungen zur Amerikanischen Sprach- und Alterthumskunde*, by Eduard Seler. Second volume, p. 128. *Die Ruinen von Xochicalco.* Berlin, A. Asher & Co., 1904.

[2] *Monumentos del Arte Mexicano antiguo*, by Antonio Peñafiel. Berlin, A. Asher & Co., 1890.

and so completely that they can be studied as a whole. In Central American art, things rarely match exactly, and there must be a reason for the difference which deserves consideration. It is most unwise to take for granted that anything superficially like another is so in reality, and the building under consideration illustrates the truth of this statement; for although the north, south and east sides at the first glance appear the same (except that there are two chiefs on the east and four on each of the other sides), there are many minor differences which must have been intentional.

A brief account of the building may be desirable. It stands on a wide, levelled space facing a higher terrace which must have been the site of the palace. According to Dr. Seler, the lowest stage is about 21 meters square, and 3.89 meters high, sloping inwards at an angle of 73° and surmounted by a frieze 1.16 meters high and a projecting cornice. On the west side a staircase leads up to a terrace on which stood a building which must have somewhat resembled the mountain temple at Tepoxtlan on the other side of Cuernavaca. Of this building the outer walls remain in part, to a height of 1.68 meters, sloping at the angle of 66° 70′.

The interior of the Xochicalco building has been dug into and destroyed, and the worked stones of andesite which formed it were carried off in the eighteenth century for the furnaces of the sugar-hacienda at Miacatlan a few miles away. Padre Alzate says there had been four stories above the terrace, but Dr. Seler considers this impossible judging by the remains of the walls and of "some large stones which look like benches" inside. Yet I think there may well have been an effect of four stories in the exterior view, owing to the way in which the outline of the building would be cut up by courses of ornament. It must necessarily have been high to allow space for the vaulted ceilings of the chambers, and there may have been a kind of gable or comb on the top to add to the height, as we see in some cases in Yucatan, and on the buildings depicted in the wall paintings at Mitla.

By comparing the plans of the Tepoztlan Temple and the Temple of the Tigers (Temple A) at Chichen Itza, with this one, an idea can be formed of its probable arrangement (Fig. 1). The stairway of twelve or thirteen steps, was nine and a half meters wide, with a division in the center, and borders representing serpent-bands which possibly had carved heads lying out upon the ground like those of some staircases at Chichen. The remaining south corner of the entrance to the building is exactly like that of Temple A, except that the latter is plain. The entrance was about the same width as the stair, and must have had supporting columns to carry the lintel. In Temple A there are two great serpent-columns. As the Spaniards saw at Tacuba a temple with sculptured serpents at the entrance, there may have been some here also. There is a tradition preserved at Tepoxtlan of a war between the kings of Xochicalco and Tepoxtlan, when some columns were carried off to the latter

place. Between these columns may have been the carved stone seat mentioned by Padre Alzate, in the same position as the Tiger seat in Chamber E, the lower building of the Temple of the Tigers.

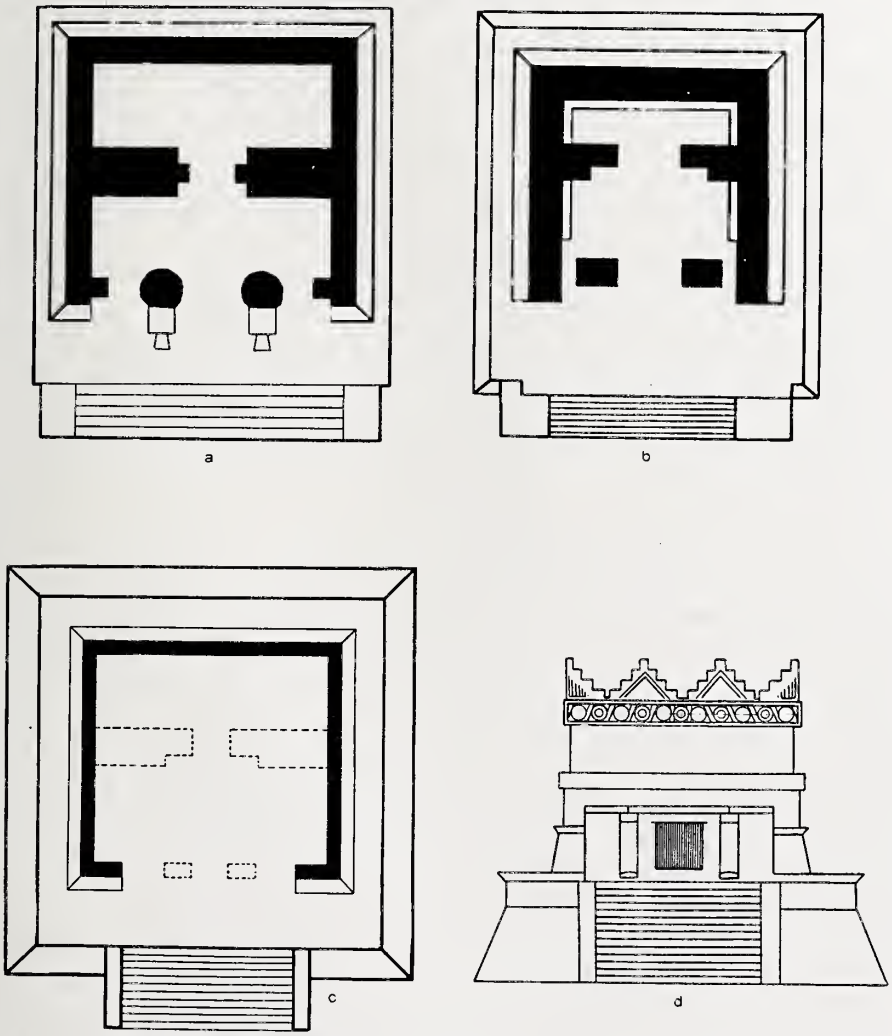

Fig. 1. *a.* Ground Plan, Temple of the Tigers. *b.* Ground Plan, Temple at Tepoxtlan. *c.* Ground Plan of the Xochicalco Building. *d.* Conjectural Restoration of the Xochicalco Building, front view.
Scale, 2.50 centimeters to the meter.

The interior of the building must have been divided into two chambers as it would otherwise have been too wide for vaulting. It is most probable that

it had a solid upper part, of rubble faced with cut stone, like the Tepoxtlan temple where Señor Rodriguez found "a flat arch" vault. The thatched roofs of some of the temples pictured in the Codices went with buildings of rubble or adobe faced with cement. An exterior of such large well worked stones as those remaining at Xochicalco would certainly have had a roof to correspond, perhaps like those of the Castillo at Chichen and the Temple of the Tigers (see Fig. 12, p. 63). The stones of the walls have a depth of 1.28 meters, so must have been intended to carry a considerable weight.

In the ruins at El Organo near Xochipala just beyond the Rio de las Balsas on the way to Chilpancingo, there is a vault made by gradually approaching rows of squared stones, capped by flat ones, but the builders of Xochicalco must have passed beyond this archaic style. It is more probable that like Temple A the vault was faced inside with smooth stones sloping inwards until near enough to be covered by a narrow layer of flat ones. The interior height of Temple A is 3.51 meters to the beginning of the vault, which has a height of about as much again, the chamber being nearly 8 meters long. The Xochicalco chambers must have been rather longer, so may have been proportionately higher. Accordingly we may imagine the dimensions to have been as follows:

Height of terrace,	5.00 m.
Interior height of chambers,	7.50 "
Thickness of roof above,	1.00 "
Possible gable or comb,	3.00 "
	16.50 meters or about 54 feet.

We will now consider the sculptures of the lowest stage which are in high relief of 8 to 11 centimeters and were formerly painted in colors on a red ground. On the north, south and east sides there are great feathered dragon-serpents, two on each side, and two short ones on the west. Their heads, placed in opposite directions at the corners, are turned backward so that each faces the other, and their bodies roll in high folds which end in feathered tails divided from each other by two bands enclosing a kind of trellis work. They are really lying on their backs, the band which represents the lower part of the body being uppermost. This is best seen on the west side (Pls. IV and V), where the short serpents have their tails curling over toward the heads. The tongues of the serpents on the west side stand out horizontally, but those of the other six hang down, and their feather crests also droop forward from the tips of their jaws, instead of rising from the tops of the heads in the usual way. Some other serpents are given for comparison in Plate VIII. The superciliary plate is strangely placed, in each case, at the tail

end. The east serpents have five feathers in their tails between two speech motives, those on the north and south have six, and those of the west three.

The long band which in each case represents the belly of the animal is without the usual cross markings, but these may have been painted to save the trouble of carving. This band, as seen in painted examples of the Mexican serpent, is always colored yellow. The objects seen above this band are not parts of the body, except perhaps a single feather at intervals. The curling objects, placed in pairs, alternating with speech motives consisting of double circles with four or five flame or breath tongues starting from them, will be referred to later. This motive is frequent in the reliefs of Chamber E at Chichen (Pl. VIII, 7), though in these examples it is usually more recurved. It is also seen on a column at Chichen as an attribute of the serpent, in this case the local *Boa imperator* (Pl. VIII, 8). In Codex Nuttall a similar motive represents flame (Fig. 2). The flamelike objects on the serpents of Xochicalco turn toward the figures of the chiefs seated above the serpent folds,

Fig. 2. Drawing from Codex Nuttall, showing Flame.

where the flame rises in front of the seats and in three out of the six, bends backward to touch the *Maxtli*, the strip which falls from the waistband. Each serpent has six of these motives (the circle being always at the end towards the head), and six pairs of the alternating curling objects, except on the west where there are three of the former and two of the latter. On the east there are double circles only under the serpents' heads.

Below the ventral bands the bodies consist of pairs of feathers separated by a repetition of the curling object already mentioned, and edged by square ended figures lacking the distinctive central line of the feathers. These square ended objects are distinct and similarly placed in the Mississippi Tablet (Pl. VIII, 6). In this example the serpents have been so conventionalized that the sets of three feathers, arranged in pairs divided by a trellis, are turned in opposite directions instead of flowing continuously. It is possible that these objects are conventional representations of flame, like those which frequently issue from the dragon-serpents in the paintings and reliefs at Chichen (Pl. VIII, Figs. 1, 2 and 5). There they are always painted yellow. All of the motives which are not feathers have a narrow border both at Xochicalco and in the Chichen reliefs, which is usually emphasized by means of a contrasting color. This convention is noticeable also in the Codices.

Of the sets of two feathers combined with a square ended object there are fourteen to each serpent on the east, thirteen to each of those on north and south and eight to each of those on the west.

The curling objects placed at intervals across the serpent bodies and in pairs along their upper edges form a peculiarly striking feature. They also spring from the upper and lower borders of the sculpture, and Dr.

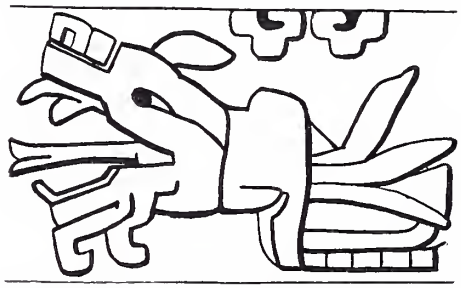

Fig. 3. Serpent's Head from the Sandals of a Colossal Figure from Tula. Mexican Museum.

Seler thought there had been a row of them along the cornice. He has drawn attention to the fact that they appear in connection with the serpent in the relief on the sandals of the colossal legs from Tula in the National Museum in Mexico. There they are placed against the border (Fig. 3). On a stone coffer with reliefs in the same museum, we have again these objects in connection with some serpent symbols. In the British Museum, there is a

Fig. 4. Two Spindle Whorls in the British Museum.

remarkable series of terra cotta whorls brought in 1844 by Captain Nepean from the island of Sacrificios, near Vera Cruz. Amongst them are several with the same device in relief, arranged in various combinations and in different degrees of conventionalization (Fig. 4). There are from eight to twelve on a whorl and their identity is unmistakable, although some of them incline towards the form which Dr. Gordon[1] has termed the climankistron. One whorl still retains its blue color.

[1] *The Serpent Motive in the Ancient Art of Central America and Mexico*, by G. B. Gordon. *Transactions*, Vol. I, p. 131.

This blue color seems to me to supply the key to the meaning of the curled figures which we have been examining, and if we consider what was probably the color of the border bands at top and bottom of the sculpture, from which some of them spring, we find additional evidence that blue was their appropriate color. Referring again to Chamber E, we find that the whole wall was first painted red, like this at Xochicalco, then the figures were painted in their several colors on the red ground, the whole being given a uniform border of blue. The sculptures at Chichen have only been exposed to the elements since the falling in of the roof, and a good deal of color is left, especially in the hollows. At Xochicalco, being on the exterior, the

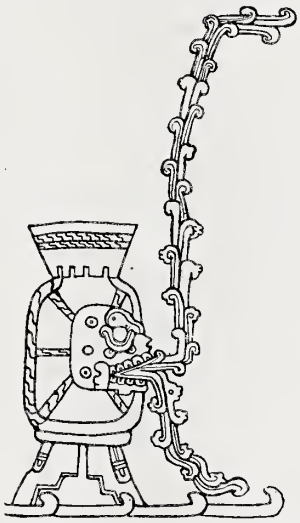

Fig. 5. Portion of a Wall Painting at Santa Rita, Showing a Stream of Water.

color has gone almost entirely, but it is permissible to suppose the borders blue, as they are at Chichen not only in Chamber E, but also in the Casa de las Monjas, and the Akat Tzib, whilst in Temple A, all the edges of the door jambs are blue as well as the upper and lower borders of the paintings. Blue being the color of water, we are led to believe that these curling objects are to be identified with the waves as represented in the Codices. These waves are readily recognized, and their characteristic form is essentially the same as that of the curled figures associated with the serpents at Xochicalco and used as a border decoration. There is a good example (Fig. 5) in one of the wall paintings at Santa Rita in British Honduras, discovered and copied by Dr. Gann.[1]

[1] Nineteenth Annual Report of the Bureau of American Ethnology. Article, *Mounds in Northern Honduras*, by Thomas Gann, Plate XXXI. Washington, Government Printing Office, 1900.

In this drawing, a stream of water edged by waves of varying shapes issues from a jar. Some of these waves have the peculiar outline of the figures under consideration, others are plain, a third kind has a divided top, and yet another has a dot in the center like some of those on the Sacrificios whorls. In the Humboldt Fragment 2[1] a strip of water (Fig. 6) has this object at intervals on it, whilst in Fragment 3[2] a snakelike stream has it developed into the usual large curling waves (Fig. 7). One of the Santa Rita wall paintings already

Fig. 6. A Stream of Water. From Humboldt Fragment 2.

referred to shows a serpent with a somewhat similar sign within a circle on the tip of its jaw[3] (Fig. 8).

The headdress of a figure next to this serpent has an arrangement o f feathers identical with the tails of the Xochicalco serpents (Pls. IV, V and VII).

A little research would doubtless find other specimens of this wave motive in Central America, but it is in eastern Asia that it is most conspicuous. It is

Fig. 7. A Stream of Water. From Humboldt Fragment 3.

constantly seen with the dragon in Japan, China, and Cochin China often placed across the body as at Xochicalco, or used alone as a symbol, sometimes singly, sometimes in groups, sometimes covering a space to represent water with the dragon upon it.

I give specimens from a Japanese book of designs, showing waves in different aspects (Fig. 9). In Fig. 9 *d*, the dragon holds a double circle in his claws, and the combination of the waves and the flamelike objects will

[1] Bulletin 28. Bureau of American Ethnology. Article, *Mexican Picture Writings of Alexander von Humboldt*, by Eduard Seler, Plate VII. Washington, Government Printing Office, 1904.

[2] *Ibid.*, Plate VIII.

[3] Thomas Gann. *Op. cit.* (see note, p. 57), Plate XXX.

be observed. The Chinese dragon pillar (from a photograph in Mr. Bishop's *Yangtsze Valley and Beyond*), shown on p. 65, has small scattered waves, but in Cochin China (Fig. 9 *e*) they again appear on the dragon's body. A number of examples might be given, for the use of this motive is widely distributed in eastern Asia where it occurs on dresses, banners and all kinds of metal and

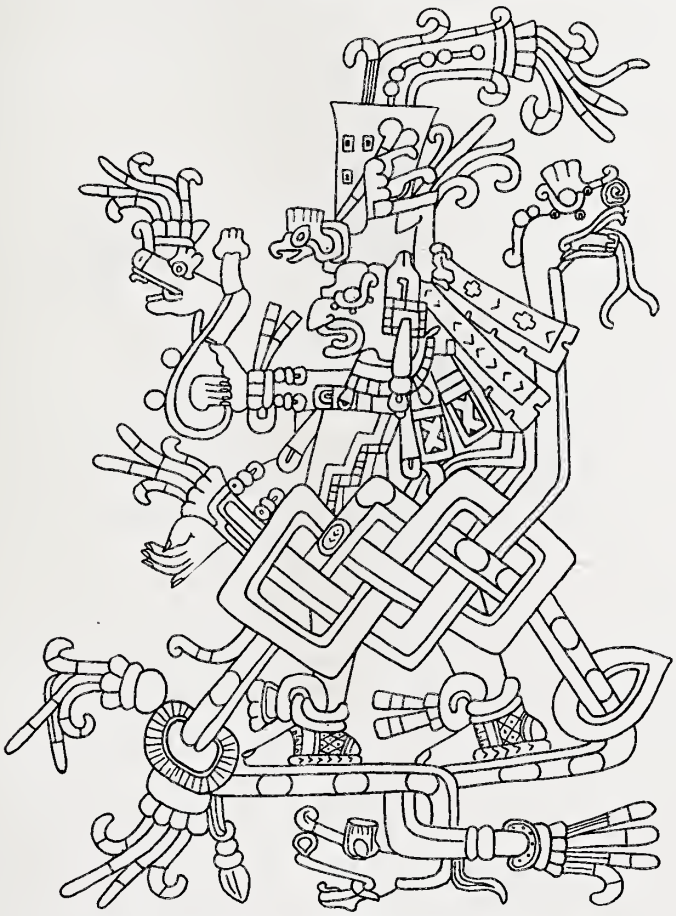

Fig. 8. Figure from Santa Rita Wall Paintings.

porcelain vessels. Like the grecque and the swastika it has survived as an ornament, and the fact that it is associated with the serpent in Mexico adds another to the list of resemblances between the East and West.

It would be an interesting exercise to draw the various phases which connect the horned and spiked Asiatic dragon with the Mexican feathered serpent. There are always some details which form links to connect one

phase with another even when we are considering objects so far apart in time and place as two dragons with claws, and with tails entwined, on a Copan altar, and a pair of dragons with claws, and with tails entwined on a modern Burmese photograph frame. Perhaps an artist's eye may be needed to see the intention through all the diversities of method and skill, just as only the master can recognize a landscape depicted in different ways by the members of a sketching club. Dr. Gordon[1] has presented a striking series of serpent heads which show how the same characteristics may vary in treatment and yet how persistent they are. All of these serpents have something of the snout or hornlike end to the upper jaw, the beard appendages under the chin, and the coiled object

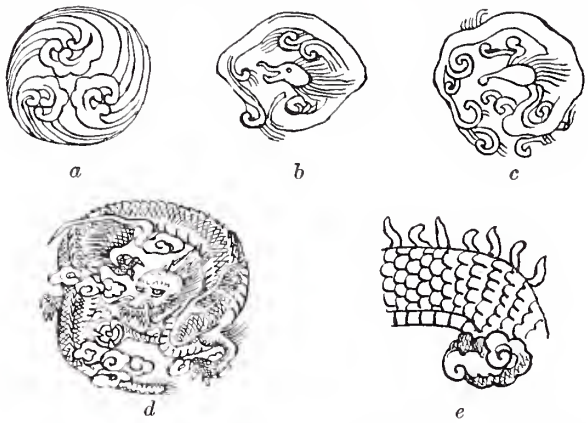

Fig. 9. Examples of Japanese Dragon, with Wave Motive.

at the hinge of the jaws. These three points are especially noticeable in the Asiatic dragon and in the Xochicalco serpent.[2]

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[1] *Op. cit.*, Plate V.

[2] It seems strange that the *cipactli* or saurian, and the *coatl* or snake should be so definitely characterized in the Day Signs of the Nahuatl Calendar, and then become almost indistinguishable in other representations. A remarkable fact in Natural History is that the same gradual changes take place as that which Dr. Gordon has analyzed in his paper. Professor E. Cope, in the Report of the Smithsonian Institute, 1898, writes: "The Squamata display among Reptilia tendencies which reach their extreme expression in the ophidia. These are first, the disposition to reduction in the use of the limbs as supports of the body, and a consequent increasing tendency to rest the body on the ground when in motion; second, the increasing mobility of the suspensorium of the mandible, permitting an increase in the gape of the mouth, and the consequent capacity for swallowing large bodies. These tendencies are seen, first in the successive shortening of the limbs and reduction in the number of digits, and finally reduction and abolition of the limbs themselves. The freedom of the distal extremity of the quadrate bone gives mobility to the mandible. In the ophidia this function acquires an enormous development, most of all in the highest venomous forms."

Passing on to the figures of chiefs seated between the serpent folds at Xochicalco, it will be observed of the four on the north and south sides and the two on the east, that they and their speeches fill the spaces and almost touch the folds. This must be emphasized because in the Peñafiel plates they are sitting on air, and have too much space round them, which alters their character, and meaning. They sit crosslegged on seats, and are alike in costume and position, but their faces have different expressions. Their bodies are in full front view with head in each case turned to one shoulder or to the other and seen in profile. On the east side the heads are turned in opposite directions, and by this attitude, I think they are meant to face in the same direction as those on the north and south, that is toward the west.

The arm nearest the west is uplifted but the other hangs down with the hand stretched out. The position of the fingers is remarkable. Not one amongst the large number of personages in Codex Nuttall (the only one to

Fig. 11. Figure of Warrior, from Chamber E, Temple of the Tigers.

which I can refer), has them similarly placed. In countries where gesture-language is used, the smallest difference in the position of the fingers has a meaning. A king of Naples once harangued a crowd entirely by gesture and in Mexico something of the same art still survives and deserves close attention in connection with the study of the Codices and wall paintings. In Codex Nuttall the outstretched finger and thumb are common, but the thumb is always uppermost whilst here it is below.

The legs are placed so that the foot in front points in the same direction as that toward which the face is turned; so that when the face is turned to the right the left foot is advanced and when the face is turned to the left the right foot is advanced. The feet show only one toe each, like those of the personage in the Humboldt Sun-disk at Berlin.

The headdress consists in each case of a conventionalized serpent head with jaw, eye and eyebrow. The four long feathers with circles and separate tips with which it is adorned resemble those worn by a warrior in the relief of

Chamber E, and the same warrior has similar wrist ornaments and anklets. Other details of the headdresses are also found in Chamber E, but the hanging earrings constitute a new feature. Necklaces of five large beads and waist-bands with falling ends complete the costume. A curious coincidence is that *ho*, the word for the number five in Maya, means also *chief*.

The speech motives of the east side chiefs are simpler than those of the others, which have the conventionalized serpent tooth and curling tongue seen also in the Chamber E speeches [1] with the addition of three short feathers, and two long ones and a third object all of which together appear like part of the serpent's tail. These infinitely varied speech motives contain material for very extensive studies in symbolism and expression. Dr. Gordon has well observed that "among its meanings the serpent is used to symbolize speech or breath," and it will be found that of these speech symbols no two are absolutely alike.

There is in the Mexican National Museum a small diorite plaque with a reduced copy of one of the south side chiefs and his speech, said to have been found during the excavation in the Calle de las Escalerillas in October, 1900.[2] I examined it with one of the Museum officials and we agreed that its authenticity seemed doubtful. In any case, it is a later copy, made perhaps from memory. The hands have not their significant position, the tooth in the speech has lost its shape, and two of the headdress feathers are partly hidden by the arm, whereas in the original they are carefully displayed, although somewhat crowded in the limited space. Some circles have been added round the speech.

Two curiously built-up glyph figures fill the spaces on the east side below the folds nearest the serpents' heads, whilst they are under the tail folds on the north and south. Under these glyph figures there are four circles surmounted by the bar which stands for the number five on the Tenango (Toluca) stela, as well as at Monte Alban, and in the Maya inscriptions, and with a glyph on a small statue in the Oaxaca Museum. Above the bar are the two parts of a curling tongue with a cartouche between them containing a glyph. Dr. Seler noted that this glyph occurs in two reversed positions, back to back as it were on the east side, and that it follows the direction towards which the chiefs look. He was doubtful of its interpretation when writing after his visit in 1888. After studying the different examples of this glyph I incline to think they were intended to be all alike and that the slight differences visible are due to the wearing of the stone. They are not quite correct in the Peñafiel plates except that at the south end of the east side.

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[1] See *Biologia Centrali Americana, Archaeology*, by A. P. Maudslay, Vol. III, Plates 44–51.

[2] See Dr. Seler, *Gesammelte Abhandlungen*, Vol. II, p. 850.

Next above the cartouche come two flames with what looks like a house, *calli*, emerging from them, and then on top there is a great upstanding tongue spread out like a **T**. This paper is merely descriptive and I cannot attempt an explanation of these signs at present.

We now turn to the west side, where the stairway leaves room only for a short serpent at each end, with a row of rebus figures and date glyphs. At the north end the dates are 9 *calli*, 11 *ozumatli* (ape), and 6 *acatl* (reed). On the south, the two certain dates are 10 *acatl*, and 2 *ollin*, with 4 *coatl* (serpent), down in the corner. Above each of the serpent heads is a long object which is seen again above the serpent at the northwest corner. The other corners are gone except the northeast one, where I do not think this object is seen.

The projecting sides of the stairway were covered with relief. On the south

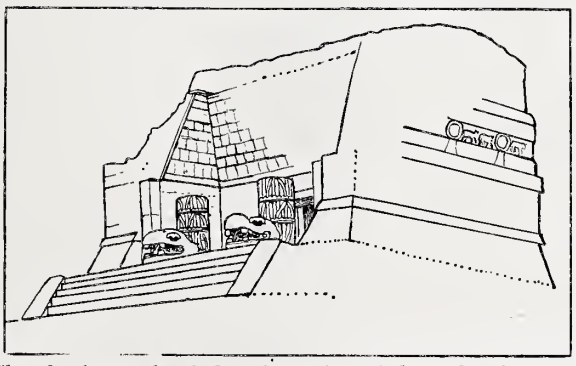

Fig. 12. Sketch of Temple of the Tigers, from below, showing Broken Vault.

(Pl. V) the upper part is gone. There remains part of the body of a chief, in side view on a seat, holding an oblong shield and three javelins in his left hand, and in his right what may be part of an atlatl. He seems to be sitting in Japanese fashion, that is, kneeling and then sitting back on the flattened feet. The seat has the shape of the Earth Bowl. Below there is a mat in alternate squares of upright and horizontal lines. Dr. Seler observed that the seat and its twisted legs were white, the squares of the mat with upright lines green, and the others yellow, making diagonal checkers. The red background and probable blue border must have added to the relief effect. In a corner is the date glyph 7 *coatl*. On the north side of the stair, only part of the seat, mat and hanging shield ornament are left.

The frieze which surmounts this lower stage of the building has a series of figures of chiefs in separate panels. On the east there are eight. The north side is partly, the south entirely, destroyed. These figures are in front view, and they are seated crosslegged on low seats. A curious detail is that the foot which crosses in front points in the opposite direction to that in which the

face is turned, unlike those below. Like those below, the figures on the east side look away from the center. The hand in front of each face holds a copal bag, the other rests on the knee. The four chiefs or priests in the middle of the east side have copal bags of a different shape to the others. They are like those carried by the personages in the wall painting at Teotihuacan. These four chiefs also have date glyphs in front of them, whilst in front of each of the others is a pair of serpent jaws apparently in the act of swallowing a sphere on which is an incised cross. The personages on the frieze, like those below, have no weapons and their feet are bare. They have square breastplates, waistbands, long stone ornaments which pierce their ears, and headdresses on which is a symbol like that on the Tenango stela. Their speeches resemble those on the obelisk found at Monte Alban[1] by Señor Batres.

Fig. 13. Stela at Monte Alban.

On the fragmentary portions left of the building itself, there are hieroglyphs and armed warriors.

From the foregoing rough analysis it will be seen how much of interest there is in this monument and that it is well worth further study. It is probable that, as at Monte Alban, the mounds which surround it conceal other sculptures. The palace site contains walls of cut stone which appear to lead to chambers. The caves also deserve skilled exploration. Their sides and

[1] Señor Batres, in his publication on Monte Alban, notes certain resemblances in the subjects of the sculptures there and at Xochicalco, and the personage on this stela is a good example (Fig. 13). He has the five large beads at the neck, and wears a sort of cape edged with the wave motive, treated as it is on the whorls from the island of Sacrificios. On the top of the back part of the headdress there is a glyph, and above it two flames like those above the glyphs in the high glyph figures between the serpent folds at Xochicalco. There is another pair of flames on the front of the headdress.

floors were covered with cement which remains in places, showing that they were permanently used. The talus outside them must contain many interesting objects.

The size and importance of Xochicalco can only be judged by riding all round it. Descending to the Barranca de los Perritos, it is seen that almost the whole hillside was supported by terrace walls. A narrow level which goes round the hill, about half way up, may have been an aqueduct which brought water from the river higher up. This river contains a quantity of fish. The barranca takes its name from certain figures which look like animals, carved high in a cliff on the left hand just below the Toma de Miacatlan, the dyke which carries water to the hacienda. The cliff is in shadow in the morning (when I saw it) so that it was not easy to determine whether the figures were natural or artificial, but they certainly had a look which recalled to my mind the walking tigers on the Temple of the Tigers at Chichen Itza.

ADELA BRETON.

Bath, England, July, 1906.

LIST OF PLATES

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5. Serpent figure from wall paintings in the inner chamber of the Temple of the Tigers, at Chichen Itza.

6. The Mississippi tablet, showing two serpent figures. *After Holmes.*

7. A figure from the relief sculptures in Chamber E, Temple of the Tigers, Chichen Itza.

8. A figure on one of the sculptured columns of Chamber E, Temple of the Tigers, Chichen Itza.

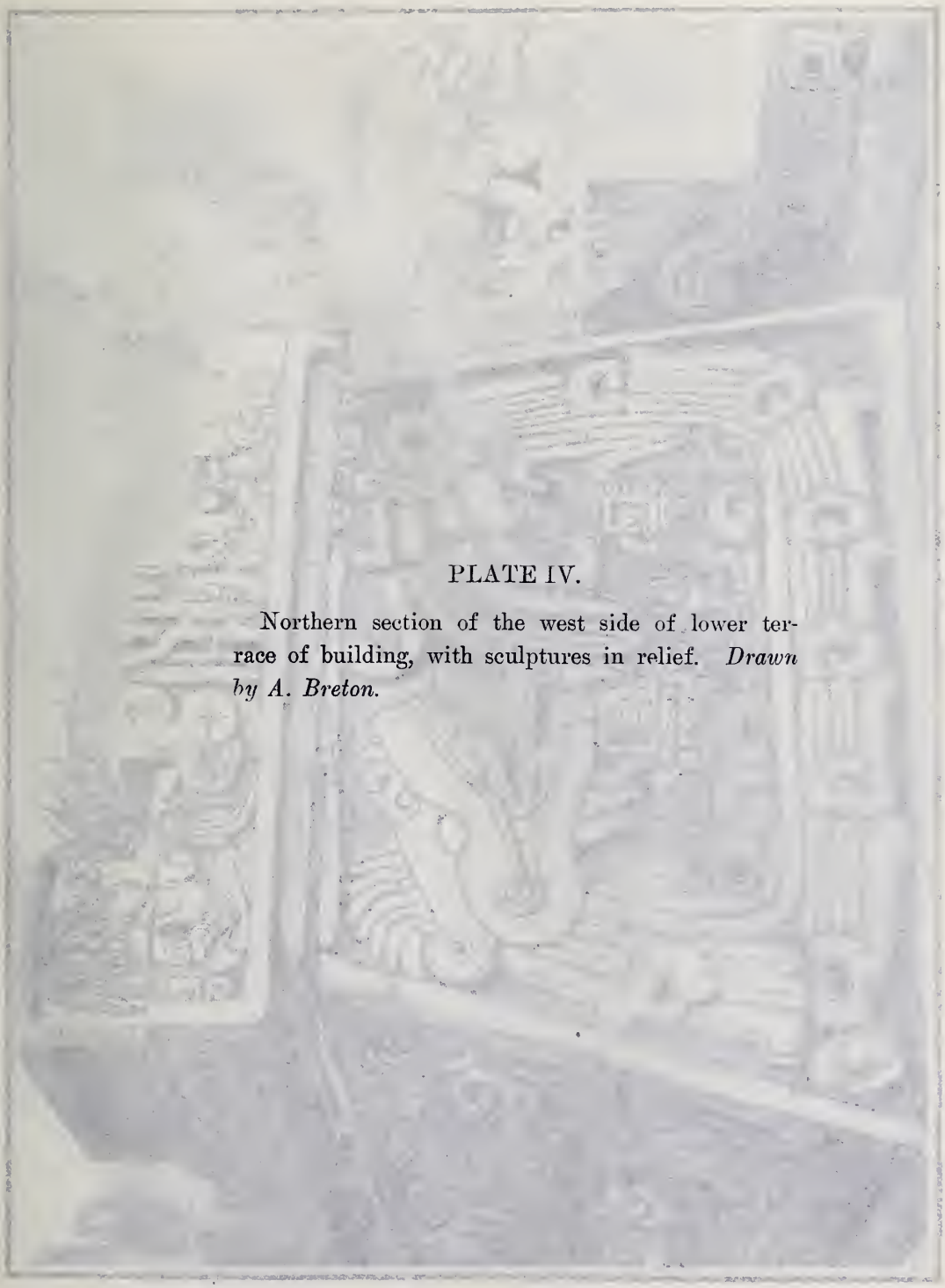


PLATE IV.

Northern section of the west side of lower terrace of building, with sculptures in relief. *Drawn by A. Breton.*

Drawn by A. Breton.

Xochicalco. Northern Section of the West Side.

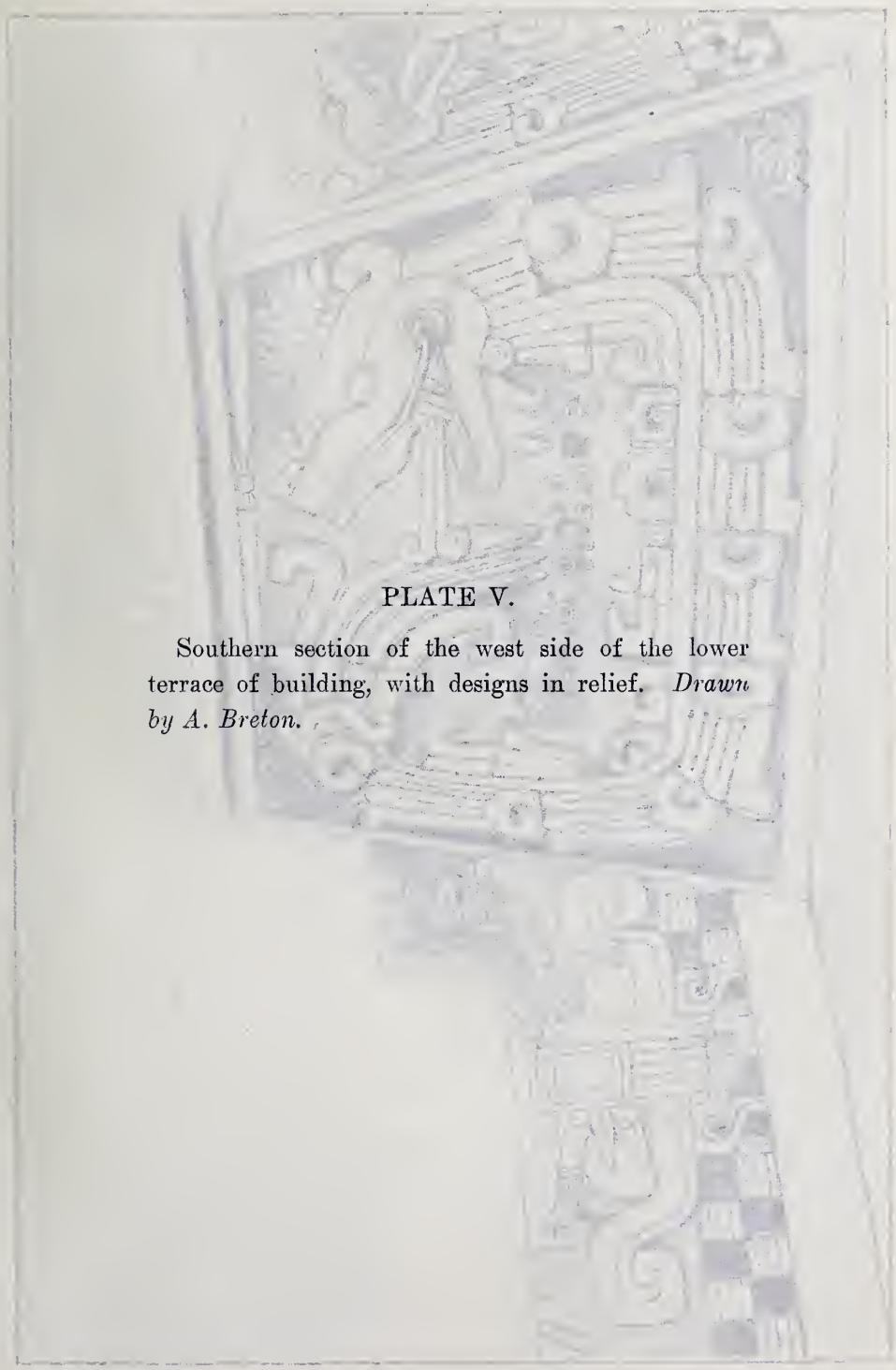
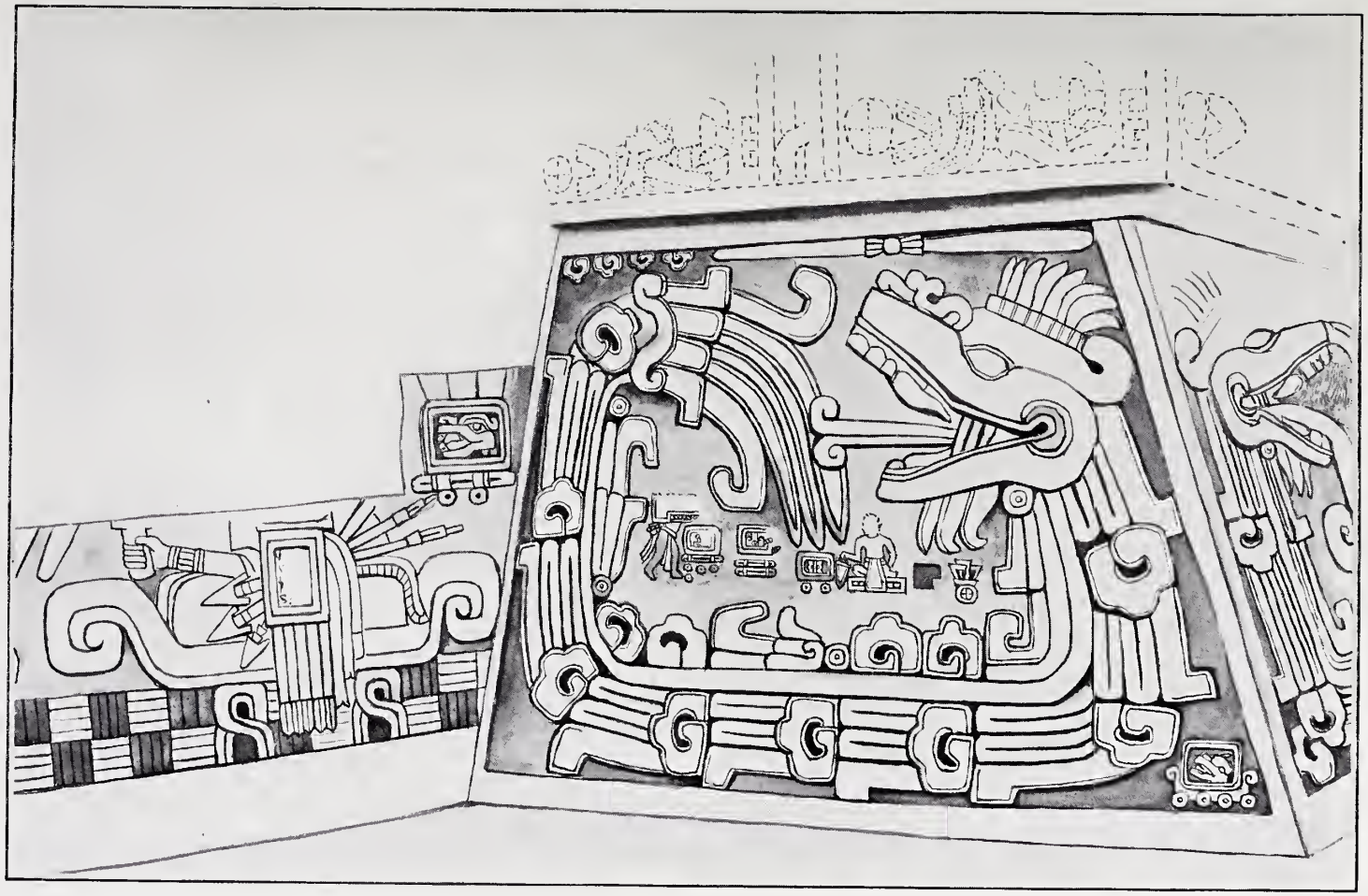


PLATE V.

Southern section of the west side of the lower terrace of building, with designs in relief. *Drawn by A. Breton.*



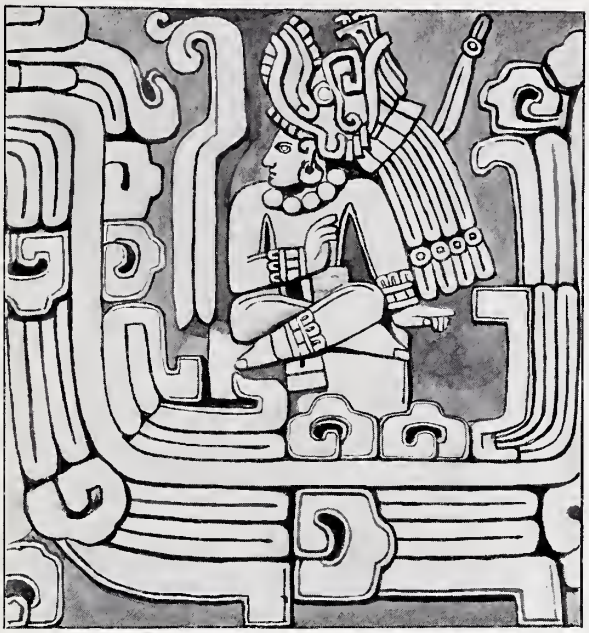
Drawn by A. Breton.

XOCHICALCO SOUTHERN SECTION OF THE WEST SIDE.

PLATE VI.

1. Seated figure of a chief. *Drawn by A. Breton.*

2. Photograph of the southern portion of the east side, showing the position of the seated chief, shown in figure 1, in a fold of the serpent. *Photo. by A. Breton.*



1 *Drawn by A. Breton.*

2 *Photo by A. Breton.*

Xochicalco. 1. Seated Figure of a Chief. 2. Photograph of the Southern Portion of the East Side, Showing the Position of the Seated Chief Shown in Fig. 1, in a Fold of the Serpent.

PLATE VII.

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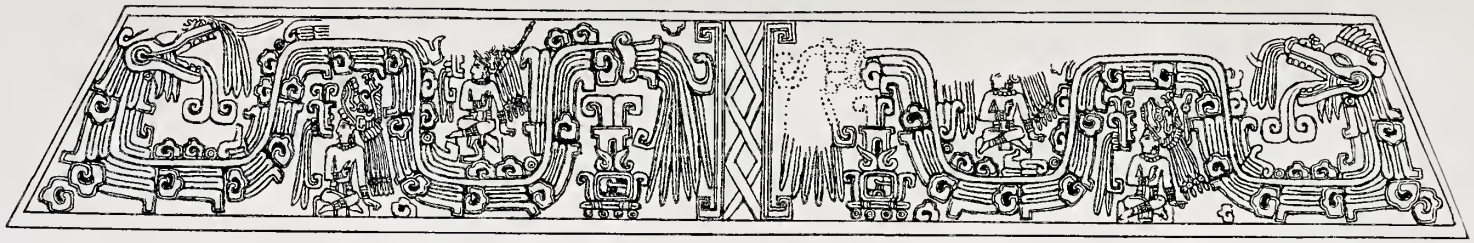

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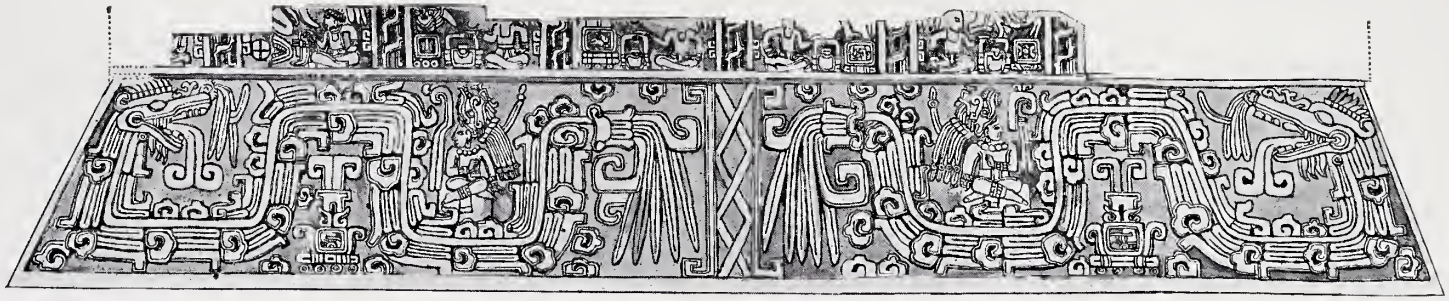

2 *Drawn by A. Breton.*

Xochicalco. 1. South Side of the Lower Terrace. 2. East Side of Lower Terrace.

PLATE VIII.

1. Serpent figure from a wall painting in the inner chamber of the Temple of the Tigers at Chichen Itza.

2. Serpent figure from the reliefs in Chamber E, Temple of the Tigers, Chichen Itza. *After Maudslay.*

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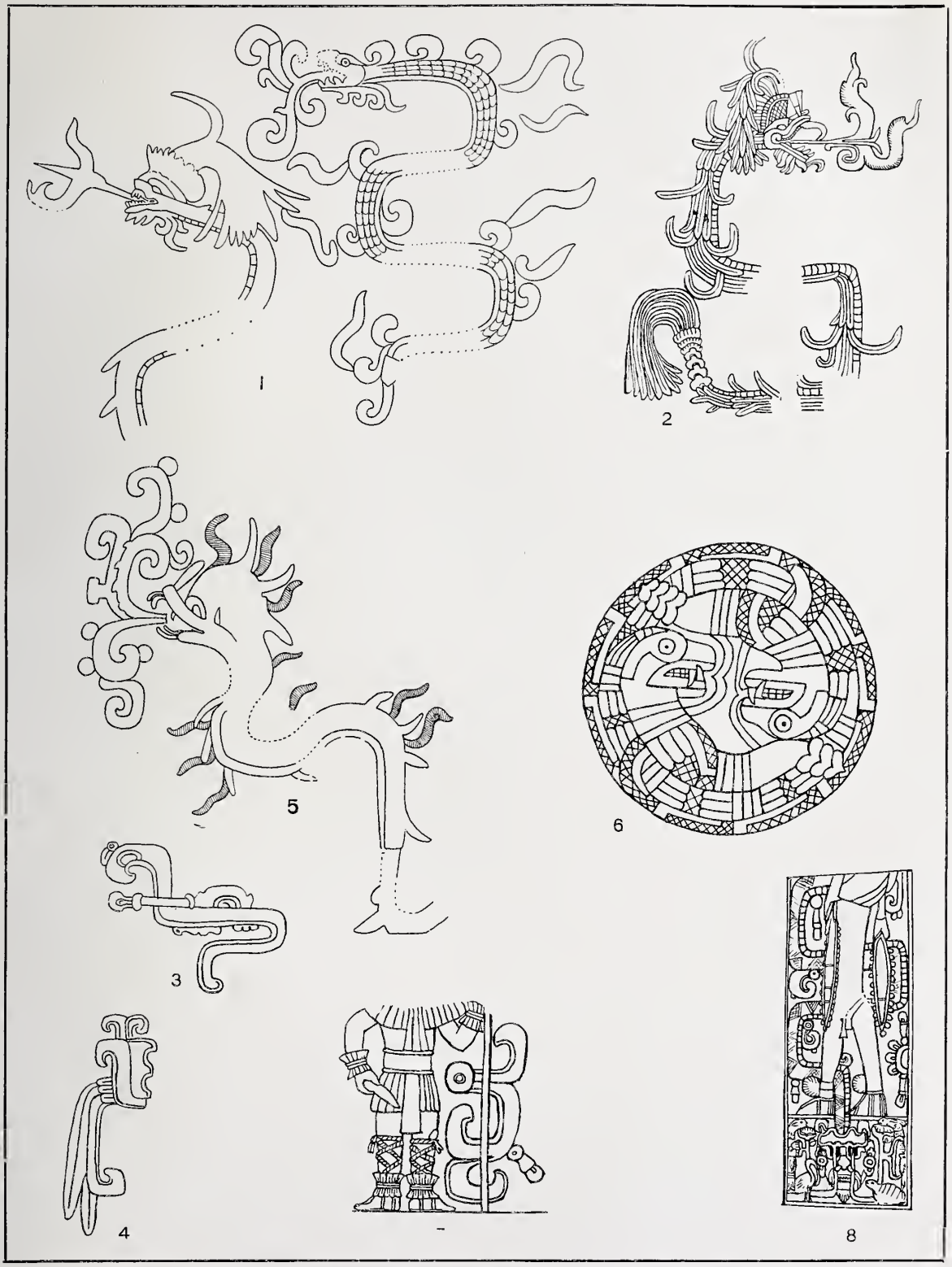

Examples of the Use of the Serpent Motive in Ancient American Art.

1, 2, 5, Serpents from the Temple of the Tigers, Chichen Itza. 6. The Mississippi Tablet. 3. Speech emblem, Chichen Itza. 4. Speech emblem, Xochicalco. 7, 8, Figures from the Temple of the Tigers.

NOTES ON THE WESTERN ESKIMO.

First Paper.[1]

General Remarks.

The investigations of Mr. E. W. Nelson among the Eskimo of the Alaskan Coast during a residence of five years at Saint Michael from 1877 to 1881, have not heretofore been supplemented by further observations, and his report published in 1899 by the Bureau of American Ethnology,[2] remains almost the only authority on the Ethnology of the Bering Sea Coast. During the twenty-five years that have passed since Nelson's observations were made, great changes have taken place in the condition of the natives of this region. These changes have been brought about chiefly through the discovery of gold at Cape Nome and the sudden growth of a large mining camp at that point, and the consequent exploitation of the natural resources of the whole coast as well as of parts of the interior, by a numerous body of men, chiefly from the States, who, attracted by the prospect of wealth from the mines, are often compelled to support existence by resorting to devices which make them the competitors of the natives in the struggle for existence. In this struggle the advantage is all on the side of the white man, who, armed with the more effective mental equipment that goes with his civilization and endowed with strong combative instincts, brings into opposition to the Eskimo, whose intelligence is keen chiefly in relation to his natural surroundings, a set of forces with which he is totally unable to cope, unprovided in his natural rights as he is with any efficient legal authority to which he can appeal in case of wrongful aggression. The absence of equity in the relations existing between the white man and the Eskimo calls for remedy, which by the exercise of vigilance might be applied; but entirely apart from the unscrupulous aggression against which legal authority, if it existed in an equitable form, might be invoked, the very existence of the Eskimo in Alaska is menaced by conditions which are no less oppressive and against which no judicial authority could protect him. These conditions

[1] The notes on which this article is based were made in connection with the work of an expedition sent from the University Museum to Alaska in the summer of 1905.

[2] The Eighteenth Annual Report of the Bureau of American Ethnology. Article entitled *The Eskimo about Bering Strait*, by E. W. Nelson. Government Printing Office, Washington, 1899.

are not to be distinguished from the attributes of civilization, for whatever might have been the effect of a gradual revolution in his economic condition, the effect of a sudden overturning of his habitual mode of life, is proving highly destructive, as might be expected. As a stock the Eskimo have adapted themselves perfectly to their environment. The natural resources of the treeless seaboard belt which they inhabit are few, but, having successfully availed themselves of these, they developed under the influence of their exceptional surroundings, a highly specialized culture type which, depending entirely on local environment for its resources, is well fitted to survive under normal conditions, but ill adapted to support radical change. This advanced specialization of the Eskimo, highly advantageous in itself, involves a perilous condition on which their continued existence depends. That condition is continued isolation; for, having been acquired at the price of capacity for change, this specialized development of the Eskimo renders them unfit to meet the shock of intimate contact with an aggressive civilization built upon experiences totally different from their own.

To be more explicit, the natural food supply of the Eskimo consists in a large measure of the flesh of the great sea mammals, to which are added several kinds of salmon, white fish and tomcod as well as a moderate quantity of game consisting of land mammals and birds. The only vegetable foods in their accustomed diet are cranberries and salmon berries gathered on the tundras during the summer and stored for winter use. Bulbous grass roots and willow leaves are sometimes eaten, but these cannot be said to form regular articles of diet. With this food they were formerly in the habit of drinking great quantities of ice cold water, until recently their only beverage. With the advent of the white hunters in large numbers and the general introduction of firearms, the sea and land mammals have become scarce, and the Eskimo find themselves in a position where an adequate supply of their staple food can no longer be obtained. Their natural food supply, in short, is rapidly being cut off. In place of it the natives are at liberty to purchase such provisions as the white traders offer to sell them at prices determined only by their own trading instincts and which are therefore necessarily of a very arbitrary character. The articles which may thus be obtained are nearly all preserved in one way or another, and even when not adulterated or contaminated through indifferent or imperfect packing, as is usually the case, contain chemical compounds which in large doses could hardly be expected to agree with a people unaccustomed to them in any form. The provisions most commonly sold are tinned meats and fruits, dried fruits, flour, sugar, molasses and tea. Although the Eskimo have shown a ready disposition to adopt this class of food when able to pay for it, it is clear that the change disagrees with them, producing symptoms of disorder which in many cases prove fatal and causing such a weakening of the physical forces that they are no longer able to withstand the

naturally severe experiences of an arctic winter. Diseases follow. Pulmonary trouble and tuberculosis are increasingly prevalent and the total absence of skilled medical treatment renders a large percentage of the cases fatal, and the course of the diseases rapid. Intoxicating drinks, indiscriminately bartered among them, often for criminal purposes, have likewise proved destructive to the health and happiness of the native communities.

In the matter of clothing the prevailing situation is similar to that which obtains in the case of food. Cheap cotton and worse woolen materials, replacing from like causes the warm comfortable fur garments which alone can give adequate protection against the severe cold, expose men, women and children to all the dangers of an arctic climate.

Another grave misfortune, for which they have no remedy at hand, is the stripping of the beaches of the driftwood, which in time past has served the Eskimo for building material, for the construction of boats, and at times for fuel, especially in the preparation of the customary sweat baths, which they consider necessary for cleanliness and health. The supply of this material was sufficient to meet their needs in these respects indefinitely, so long as it was reserved for them alone. The demand for fuel in the mining camps, and the needs of prospecting parties who are apt to be careless and wasteful in this respect, have denuded the beaches of a commodity which in a treeless country is of peculiar value to the inhabitants, who are thus left without one of the articles essential to their plan of life.

To what extent these changed conditions have affected the numerical strength of the population I am unable to say. The census of 1900 gives the entire native population of Alaska as 29,536 but does not distinguish between the different stocks. Nelson unfortunately gives no figures that might serve as a basis for comparison, but, that the depopulation of certain districts was already under way in1880 is made sufficiently clear by a graphic passage in Nelson's report[1] in which he describes the almost total extinction of the population of Saint Lawrence Island during the winter of that year from the combined effects of famine and disease, following the visit of a trading vessel to that island during the previous summer, an event which is assigned as the direct cause of the conditions which resulted in the deaths of more than one thousand people during the season when all communication with the island was cut off by the ice and no relief could be obtained. That similar conditions have prevailed in various parts of the country in more recent years seems to be indicated by the fact that some of the villages mentioned by Nelson are now in ruins. In 1900 an epidemic of pneumonia, which appears to have been general along the Bering Sea coast, caused a large number of deaths. This appears to have been a particularly harsh calamity, the details of which can-

[1] *Op. cit.* p. 269

not be clearly ascertained. All the information that I could gather leads to the conclusion that a rapid decrease in population has taken place in the last ten years and that the rate of decrease is at present accelerated from year to year. A loss of vitality and a diminished interest in life are significant symptoms of the way in which the change affects the minds of the Eskimo. One of the most remarkable traits of the whole stock, one which has distinguished them at all times and wherever they have been encountered, may be described as a light-hearted amiability, a disposition that enables them to make the best of every situation and renders them cheerful in the face of hardships which would overcome any other people. This faculty, which has had much to do with their success in the past, is most noticeable today in those communities that are remote from civilized influence. In these, a pleasant manner and an intelligent address still mark their intercourse with strangers, and they show an unusual degree of kindliness and good humor in their relations with each other. The fact that this trait becomes less pronounced and even shows a tendency to disappear under the influence of civilization, is one of the most dangerous symptoms in the present condition of the Western Eskimo.

Apparently the schools and missions established for their benefit are not equal to this emergency, for the pupils are not always the most hopeful, or, for that matter, the best trained to meet the exigencies of life. A Nunivak Island woman of twenty-three named Keouiouk (Pl. XIII), the wife of a prosperous man named Tukataruk, a woman who had seen almost nothing of white people and spoke not a word of any language but her own, showed a type of intelligence and a degree of refinement and good breeding that impressed me much more favorably than the qualities exhibited by those who had been to school. This difference, however, is not to be attributed to the influence of the schools but to the general conditions of which I have spoken. Keouiouk was for two weeks my instructor in her native language, and every day during this period I spent several hours in her summer house working upon a grammar and vocabulary with her help and that of her relatives. The Eskimo women seem to have a slightly quicker order of intelligence than the men and there are not lacking among them highly resourceful intellects.

The number of Eskimo in Alaska in 1903 has been given as 20,000,[1] but from the data which I was able to gather in the summer of 1905 I am convinced that the estimate is too high and that 10,000 is a much closer approximation to the actual number and it is quite possible even this estimate is somewhat excessive.

The importation of reindeer into Alaska, begun by the United States Gov-

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[1] The statement is made in a report from Frederic Funston, Brigadier General U. S. Army, to the Secretary of War and printed in the appendix to the Report of the Secretary of the Interior for 1903, p. 270. The Government Printing Office, Washington, 1903.

ernment in 1890 in order to make provision for future developments in that territory, and to afford relief to the natives, might be expected, if successful, to affect the condition of the Eskimo favorably. In 1901 there were in all nine herds, aggregating a total of 4,164, of which 1,300 had been imported,[1] mostly from Eastern Siberia with a few from Lapland. In 1903 these herds contained 6,114 head, belonging to seventy-five individuals, of whom fifty-four were Eskimo.[2] At that time the importation had ceased, owing to the refusal of the Russian Government to countenance the traffic, and since 1902 none have been imported. In 1904 the herd had increased to 8,189 head.[3] In 1905 the number is given as 10,241, of which 3,073 belonged to the government, 2,127 to the missions and 5,041 to "reindeer herders and apprentices."[4] These figures show that it is still too early to predict whether or not the experiment of introducing live reindeer into Alaska will prove ultimately successful. It would also be rash at present to assume that, in the event of its proving a success, the Eskimo will be the ones to profit most thereby. In any case it will be many years even under the most favorable conditions before they can become a source of general wealth to the native population, as they are to the inland Chukchee of northeastern Siberia, where the great herds number their millions and where the breeding is an ancient industry, developed independently without the interference of external agents. The inland Chukchee are by selection a reindeer people, and the Alaskan Eskimo are not. If the Eskimo shall not themselves have disappeared before the introduction of reindeer into Alaska has passed the experimental stage—and of this event there is grave danger—they will have become transformed from a race of maritime hunters to a race of herdsmen. The change will go hard with them at best, and the issue is extremely doubtful, but in this issue lies, in my judgment, their only hope. The experiment deserves to be managed with care, and in order to guard the interests involved and anticipate all questions of ownership, it will be necessary for the government at Washington to exercise the greatest possible vigilance.

Trade.

In ancient times and until the whalers and fur traders diverted it in another direction, an active trade was carried on between the Asiatic and American shores of Bering Strait. The inland Chukchee needed oil, blubber,

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[1] Sheldon Jackson, *Eleventh Annual Report on the Introduction of Reindeer into Alaska*, p. 17. Government Printing Office, Washington, 1901.

[2] *Report of the Secretary of the Interior for the year ended June* 30, 1903.

[3] *Statement of the Commissioner of Education to the Secretary of the Interior for the year ended June* 30, 1905.

[4] *Report of the Secretary of the Interior for the year ended June* 30, 1905.

ivory, seal skins and stout thongs of walrus hide; and for these they offered in exchange, reindeer skins, always greatly in demand on the part of the Alaskan Eskimo, for the manufacture of clothing. The women especially desired the light colored fawn skins for their handsome summer outer garments and consequently an active trade was in operation long before the Russians appeared on Bering Sea. In the transaction of this business, the Eskimo settled on the Asiatic shore of the strait, together with the maritime Chukchee, were usually the middlemen, and in the autumn of each year parties of these traders from the Asiatic shore made excursions in large skin boats to the American side with their wares. Occasionally Eskimo parties from Alaska crossed the straits to the Siberian side, but the carrying business belonged principally to the Asiatic contingent. In addition to the articles already mentioned, they received in exchange, skins of the beaver, marten and lynx (animals not found in Asia), and white, gray, red, black and blue fox skins.

When tobacco and tea were introduced into Eastern Siberia by the Russians, the trade with America was increased, owing to a demand on the part of the Eskimo for these articles, with which they then first became acquainted At the same time and in the same way blue glass beads were introduced into the commerce of the Eskimo, and as an indication of the prices which prevailed and the profits of the trade, it may be noted that these old blue beads, still preserved by the Eskimo, range in value according to their estimation, from a red fox skin to a reindeer skin (from one dollar to twelve dollars) each according to size.

Since the American purchase of Alaska, American whalers, on their voyages to Bering Sea and the Arctic Ocean, have carried on a trade with the Eskimo, giving in exchange for whalebone such articles as rum and molasses, biscuits and flour. In addition to these commodities, at the present time tinned provisions, dried fruits, cotton drill (used for clothing and summer tents), cheap woolens, arms and ammunition, form the principal contributions of civilization to the trade with Bering Sea, while in addition to whalebone, skins of the Alaskan fur bearing animals are given in exchange by the Eskimo. In the meantime the old native trade across Bering strait has fallen off for several reasons. First, because the trade of the Eskimo in furs and walrus ivory has been diverted by the whalers and the local traders. Second, because American tobaccos and teas have replaced those supplied formerly by the Russians to the Chukchee and passed on by them to the Eskimo. Third, because in what is left of the old trade, whalers and local traders established on the Alaskan shore, and owning small steamers or sailing vessels, act as middlemen and make trading expeditions to the Siberian Coast in defiance of Russian law. Since Russia went to war with Japan these expeditions have been unhampered, the coast having been left unprotected by cruisers. Reindeer skins from Siberia are still in demand among the Eskimo, and

also among the Alaskan miners, but the trade is no longer in the hands of the natives. Another trade of long standing is that which is still carried on in diminishing volume between the Eskimo and the Athapascan tribes in the interior of Alaska and northwestern Canada, from whom they have been accustomed to obtain in exchange for seal oil and other sea products, wooden dishes, and of even greater importance, wolf and wolverine skins, considered indispensable by the Eskimo for the trimming of their garments. Exchange of commodities among themselves is still carried on by the Eskimo, who make long summer voyages in their umiaks (skin boats) from point to point on the mainland and to and from St. Lawrence Island, King Island and Nunivak Island; and in winter make equally long journeys overland with their dogs to take part in the intertribal festivities which play such an important part in the social intercourse of the Eskimo and which serve to stimulate trade relations.

Education.

By act of Congress approved June 6, 1900, Section 460, Chapter 44, part 2 (31 Stat. L., 330), a tax is imposed in the form of a license on all business conducted in Alaska. This act also provides that one half of the license money collected in incorporated towns shall be turned over to the treasuries of these towns for school purposes (Sec. 203, Chap. 21, part 5). An amendment to Section 203, approved March 3, 1901, provides that one half of the license moneys collected on business transacted outside of incorporated towns in the district of Alaska shall be set aside and expended within the discretion and under the direction of the Secretary of the Interior for school purposes outside of incorporated towns. To insure the proper administration of the fund thus established, a further amendment to the above mentioned Section 203, approved March 2, 1903, provides that these moneys shall be covered into the treasury of the United States and set aside to be expended so far as may be deemed necessary by the Secretary of the Interior within his discretion and under his direction for school purposes outside incorporated towns in Alaska. In 1897 four government schools had been established among the Eskimo. In 1902, under the terms of the act above mentioned, three more were added. In 1903 the number had been increased to nine with a reported enrollment of 563 pupils. During the fiscal year ending June 30, 1904, $103,377.30[1] had been collected on the fifty per cent basis under the amendment of 1903, and transferred to the credit of the Secretary of the Interior for education in Alaska, and among the new schools established, five were on the coast of Bering Sea

[1] *Report on Education in Alaska*, by Sheldon Jackson, Chap. XXXVI of the Report of the Commissioner of Education for 1904. Government Printing Office, Washington.

and the Arctic Ocean, or, in other words, in the territory of the Eskimo, making a total of fourteen schools maintained in this region at Government expense in 1904.

The schools which, by the various acts of legislation referred to, were established outside of incorporated towns, might be for white children or for the children of aboriginal people or for both. The next act of Congress, however, changed the state of affairs entirely. This act, entitled "an act to provide for the construction and maintenance of roads, the establishment and maintenance of schools and the care and support of the insane in the District of Alaska and for other purposes," provides among other things that one fourth of all money received from licenses issued outside of incorporated towns shall be applied to the establishment and maintenance of public schools in the said district and that these shall be under the direction of the Governor of the district. Section 7 reads as follows:

> That the schools specified and provided for in this act shall be devoted to the education of white children and children of mixed blood who lead a civilized life. The education of Eskimos and Indians in the district of Alaska shall remain under the direction and control of the Secretary of the Interior, and schools for and among the Eskimos and Indians of Alaska shall be provided for by an annual appropriation; and the Eskimo and Indian children of Alaska shall have the same right to be admitted to any Indian boarding school as the Indian children in the States or Territories of the United States.

By this act, approved January 27, 1905, the provision of March 2, 1903, was repealed by implication; the license fund formerly devoted at the discretion of the Secretary of the Interior to an educational movement in which the aboriginal population had a right to its share was withheld from them entirely and in its place a special appropriation was made by Congress for the education of the aborigines under the direction of the Secretary of the Interior.

The meaning of the phrase "children of mixed blood *who lead a civilized life,*" is not clear, but I think that white children alone will benefit by the provisions of Section 7 quoted a short distance back, and that, in the application of this law children of mixed parentage will be included in the class designated "Eskimos and Indians," for whom schools are to be provided by an annual appropriation.

For the fiscal year ended June 30, 1905, Congress appropriated $50,000 under the provisions of Section 7 of the Act of 1905, and this sum was applied by the Secretary of the Interior to the maintenance of schools among the various native peoples of Alaska. In his annual report for 1905 the Secretary states that this amount "was not sufficient to properly maintain the service, the office being compelled to close many of the old schools that had been in operation for several years and to refrain from opening new schools though the latter were urgently needed."

The schools to which reference has been made as having been established among the Eskimo, are distributed along a coast line which trends in a northerly direction and reaches from the 59th to the 71st degree of latitude. Most of the children who attend with any regularity, are said to acquire some ability to read and write English as well as to understand the spoken language and to speak it intelligently. The young people from eight to twenty years of age are generally eager for instruction; they exhibit a quick intelligence in acquiring knowledge and the rate of progress is about the same as in the public schools for white children in this country in those infrequent cases where the conditions have any measure of equality, for the equipment of the Alaskan schools is very meager.

At most of the points where government schools have been established church missions are found also, and sometimes the two are combined. Some of the missions are of much longer standing than the government schools, and they have always maintained some sort of a school establishment. The Roman Catholic missions are the best equipped for school work and in this respect they achieve much greater results than others which came under my observation. The school at Holy Cross, Koserefsky, is especially noteworthy for its organization and condition. There is a boarding school for boys and another for girls, in each of which there are about fifty pupils. Each is divided into two classes: the younger class of boys receiving an English school education, while the older class apply themselves entirely to manual and industrial training. In the girls' school the younger class receives the same elementary education as the boys and the older class is instructed in every branch of housework. In connection with the school there is a garden of about eight acres, where the few inches of surface soil which thaws during the brief summer is carefully cultivated and made to produce a crop of vegetables each season. This mission also maintains half a dozen head of cattle and a flock of domestic fowl, the only poultry of which I have any knowledge in Northern Alaska. Holy Cross Mission has accomplished much in counteracting the evil effects of civilization.

The government and mission schools,[1] if properly organized and conducted on sound, practical principles, are undoubtedly capable of doing much good. The methods adopted should harmonize with the social life of the native communities and the traditional customs of the people should be duly respected. The dances, the festivals, and the observation of ceremonial rites prescribed by custom and dignified in the minds of the people by ancient usage and venerable associations often of a religious character, should be treated with

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[1] Following is the number of missions established among the Eskimo in Alaska in 1905: Russian Orthodox, 3; Roman Catholic, 3; Episcopalian, 3; Presbyterian, 3; Swedish Evangelical, 2; Moravian, 2; Congregational, 2; Lutheran, 1; Quaker, 1.

the consideration that is due to the manners and customs of all men, and the celebrants should be in no way molested or even discouraged in the regular performance of these rites and customs. To do so is to ensure the embitterment and offended pride of the older generations and to incur very grave risk of doing irreparable and permanent injury to the people as a whole. The dances and festivals to which I have special reference constitute the diversions of the Eskimo, in which they have been accustomed to participate with much satisfaction and with no small advantage. The practical value of these diversions in their social life should not be overlooked. Through the long sunless winters they serve to keep their faculties in active operation, to promote their physical well-being, to maintain order, and to preserve the temper of the communities from the irritation of prolonged inactivity in close winter quarters. I know of nothing that civilization can offer the Eskimo that is capable of taking the place of their hereditary forms of entertainment. If the fact that these diversions preserve religious beliefs foreign to the more advanced ideas that belong to higher planes of culture is justly urged against them, over against this emotional argument should be set the practical one of utility, in formulating measures which have in view the vital interests of the Eskimo communities.

Condition of the Native Arts.

Until quite recently all the materials used in the arts by the Alaskan Eskimo were of local production.

Clothing.—The Alaskan Eskimo have until recently made all their garments from the skins of animals, taken by themselves or obtained in trade from the Asiatic side of Bering strait. The skins of reindeer, marmot, squirrel, mink, muskrat, hare and seal, as well as various species of waterfowl and even the skins of salmon, have been utilized in varying degree and according to local conditions. The fur of the wolf and the wolverine was used for trimmings. Waterproof garments were made from the intestines of seals or the throat lining of the sea lion. In the manufacture of garments the thread employed was made from the sinew of the reindeer, the white whale and the walrus. The thick strands of sinew, after being dried, were beaten out, combed and shredded with the fingers. The fibers thus extracted were twisted and spun into thread by rolling between the palm of the hand and the thigh. The thread thus made was stronger and more durable than any made from vegetable fiber.

At the present time the manufacture and use of skin garments is quite general and in a gathering of Eskimo, assembled from the different villages from Nunivak Island and the Koskokwim to Cape Prince of Wales, all the animals enumerated in the preceding paragraph would be represented in the

clothing of both sexes. These garments are cut on the same pattern and decorated in the same manner as formerly, but many individuals have taken to wearing a very inferior grade of woolen stuff and even cottons, for both inner and outer garments in summer and for inner garments in winter. These materials can now be obtained anywhere from traders. In the manufacture of skin garments both sinew and cotton thread are used at the present time. Those who go best clad and wear the choicest garments invariably sew them with sinew thread. They insist that it is greatly superior and that a garment made in this way is worth much more than one sewed with imported thread. Consequently those who wish to be well clothed are very particular in this respect, but when the same people make a garment for the white man's trade, they invariably sew it with spool cotton, since it comes less expensive. They will not be persuaded to use their own favorite methods in the manufacture of garments made for sale, because, as they insist, with good reason, the material is too scarce. They therefore reserve the sinew for their own use, but nevertheless it is gradually being replaced by spool thread.

Weapons.—The weapons and hunting implements, characteristic of the Alaskan Eskimo as well as of the other divisions of the stock, exhibit a high degree of ingenuity, and present a great variety of forms, each adapted to its special use. The principal classes of weapons were the bow and arrow, to which pertained a quiver containing a variety of arrows; the spear thrower, used in projecting several different kinds of spears; the walrus harpoon and the whale harpoon, the heaviest weapons in the armory of the Eskimo.

The bow and arrow, made carefully after the old models, and preserving every detail of construction, is still used by the boys in their sports and pastimes, but is discarded entirely in the chase, for the breech-loading rifle and the shotgun have taken its place, and every Eskimo hunter is well provided today with firearms and ammunition. The spear thrower is still occasionally used, especially in the region between the mouths of the Yukon and the Koskokwim, for throwing light darts in hunting birds and small seal and in catching salmon, while the larger seal spears, the walrus harpoon and the whale harpoon are still in general use; but those that were formerly tipped with stone are now tipped with metal. Others are still tipped with ivory. All classes of native weapons, however, are gradually falling into disuse as game becomes scarcer or as firearms take their place.

Boats.—Boat building, another art in which the Eskimo excelled, still holds its own, for the white man's trade can supply nothing to take the place of the *kayak* and the *umiak*. They cost more now, owing to the diminished supply of materials, but the models and the construction have not changed. The wooden framework and the walrus hide covering still serve the same purpose as of old. The sails of the umiak, however, are now made of light canvas in place of the grass matting formerly employed.

Drawing and Carving.—The well developed æsthetic faculty of the Eskimo has always been favorably illustrated by their skill in drawing and in carving. The medium in which they work is walrus ivory and the carvings consist chiefly of representations of animals, in the round or engraved upon polished surfaces. Weapons and implements are commonly embellished by some ornamental feature executed in either of these methods. Articles of a purely æsthetic quality, such as pictures engraved on sections of walrus tusk, have been collected in considerable numbers, and are still frequently met with, for at the present time they are made to supply a demand on the part of traders, travelers and the white residents generally. Knives, made by the natives after patterns of their own devising from old files or scraps of steel acquired haphazard, are now employed in the carving of ivory. All of the western Eskimo are adept in the art, but some individuals excel to such a degree that their work is known throughout their respective tribes. This is almost the only faculty that has availed the Eskimo in his recently precipitated struggle, and enabled him to hold his own with the white man. In this regard he has no competitors in his own country and the very considerable demand for ivory carvings among the families of miners or travelers returning to their own country, has created an active trade in works of art of this class, which enables a number of men to support themselves. The artistic faculty is developed to such a degree that an Eskimo artist, with no instruction whatever, without modification of his tools and without apparent effort, can copy the methods of our engravers, studied from pages of discarded magazines picked up haphazard on the streets of Nome. Not only are the methods and the technique of the civilized engraver readily intelligible to the Eskimo artist, but he is able with his own tools and materials to reproduce the other's work perfectly in all of its details. The acquaintance of the Eskimo artist with our illustrated literature could not fail to leave its mark on his artistic productions, for, having discovered our methods and our tastes, he applies his borrowed technique in the drawing of things familiar to him, and although his work is not always improved by this external influence, since it leads to the sacrifice of traditional methods in drawing and characteristic modes of expression that had their advantages, he cultivates the habit, for he finds that it pays. At present, the carving of the Eskimo is a degenerate art, but occasionally there appears the work of a master hand, unhampered by tradition and undegraded by borrowed ideals. The only tool used in engraving is a steel point ground out of a piece of file or a broken knife blade. By means of this implement, fine lines are cut to the proper depth, and the finished drawing is rubbed with soot, mixed with oil, to fill in the lines and bring out the design in black. Sometimes the point is used without any preliminary outlines to guide the eye and sometimes the main features of the picture are first sketched in by means of a fragment of graphite or by

light scratching. A bit of lead pencil, a recent acquisition, is often found in the outfits of the best artists and is now frequently used in blocking out the picture or in sketching the lines to be traced later by means of the point. Usually each village has its leading artist, with established reputation acquired by merit and jealously guarded.

Personal decoration.—Apart from the ornamental features of their clothing, the appropriate personal adornment of an Eskimo man consisted, until lately, of a pair of labrets inserted in either side of the lower lip, made from ivory or stone and sometimes set with glass beads; and a tattoo mark on either cheek. Occasionally, tattoo marks are found on the forehead as well, and on other parts of the body. A Diomede island man was observed with a mark on either cheek, close to the mouth, another on each temple and two more on the forehead (Pl. IX Fig. 6). A boy of twelve on the same island had a raven tattooed on his breast (Fig. 1), and the feet of the same

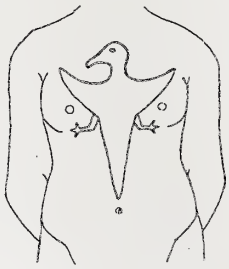


Fig. 1. Figure of a Raven Tattoed on the Breast of a Diomede Island Boy.

bird on his legs. Apart from these decorations the men have no personal ornaments, except certain ceremonial paraphernalia worn only on stated occasions. The habit of wearing the labrets is rapidly passing away, only the older men have their lips punctured and even a majority of these have discarded their labrets. The face shown in Pl. IX Fig. 6, and that of the man in Pl. XV Fig. 1 have the scars where the lips have been perforated, but no labrets are worn.

The personal ornaments of the women consist of earrings made in a great variety of designs to suit the individual taste, necklaces of ivory or of glass beads and bracelets of the same materials. The custom of having designs tattooed on the face and on the arms also prevails among the women. The commonest pattern, as well as the most widely distributed, consists of a series of vertical lines drawn from the lower lip to the point of the chin (Pl. IX Figs. 1 and 2), the number of lines varying with locality. A St. Lawrence island woman was observed with an elaborate pattern tattooed on each cheek (Pl. IX Fig. 5), in a style not encountered on the mainland, where the only face marks seen among the women were the vertical lines on

the chin. A King island woman was observed to have patterns tattooed on her forearms from the elbow to the wrist, and two others of the same island were found with similar patterns on their left arms, while the right arms were without tattooing (Pls. X, XI and XX).

Nelson mentions the wearing of labrets by women in the region lying between the mouths of the Yukon and the Koskokwim and on Nunivak Island, but I failed to observe a single instance of this kind, and the custom seems to have died out completely among the women. The fashion of all classes of personal ornament, both of men and women, varies locally and expresses individual preference, and sometimes, also, I believe, the relation of the individual to the community, for these communities correspond in a measure to tribal divisions and that the tattoo marks sometimes partake of a totemic character there is every reason to believe. Indeed, it is not unlikely that the custom of tattooing itself, taken together with the patterns usually employed among the Eskimo, is a surviving evidence of the former existence of a fully developed totemic system, of which further indications are found in other connections, and which still survives in a degenerate form and with diminished force. It does not follow that the more elaborate patterns employed at the present time are degenerate totem marks, but it is probable that many of the elements of which these compositions are made up were originally totems. The totemic character survives also in the meanings assigned at the present time to these pictographic elements, meanings which can be ascertained without difficulty, as a rule, although occasionally they appear to have become lost.

In the raven on the breast of the Diomede island boy, the totemic character of the design is well illustrated. In this example neither the object represented nor the motive for its representation is at all doubtful. There is no evidence of decadence, either in the design itself or in the system of which it is the symbol. The meaning of the figures on the face of the Diomede island man shown in Pl. IX Fig. 6, on the other hand could not be determined. The symbol of the white whale, observed on several individuals in the region of Bering strait, is shown in Pl. IX Fig. 3. The same figure appears again as an element in the design on either cheek of a St. Lawrence island woman (Pl. IX Fig. 5), but the meaning of the whole design in this case could not be determined. The patterns on the arms of the King island woman (Pl. XX, Pl. X Figs. 3 and 4, and Pl. XI Figs. 3 and 4) were explained by the owner as follows. Left arm, the circular figure at the wrist and repeated at the outside of the arm in the middle represents the *igloo* or Eskimo house. Each of the other elements on the outside of the arm and the wide elements repeated on the inside represents the white whale, and the tall branching elements near the wrist and repeated four times on the inside of the arm represent trees. Right arm, at the wrist and at the outside

of the arm between two trees is represented the *igloo* and on the inside of the arm repeated nine times, the white whale. The same elements appear on the left arms of two other King island women (Pl. XX, Pl. X Figs. 1 and 2, Pl. XI Figs. 1 and 2). In the cases of these three women and also of the St. Lawrence island woman the motive assigned for the tattooing was the desire for ornament. This indeed is usually the explanation offered, but occasionally, as in the case of the Diomede island man with three sets of marks on his face, the figures were explained as "medicine" and their presence was said to have a direct relation to the welfare of the individual. Sometimes also they were explained as marks of distinction, recording some physical achievement. In regard to the lines on the women's chins, a pattern common to all the western Eskimo but varying in the number and spacing of the lines, I could get no explanation except that they were placed there for ornament. While the ornamental character of the designs employed may furnish a plausible motive for tattooing both on the face and on the arms, since the arms are usually exposed in the igloos, it can hardly be doubted that in many cases at all events it has a deeper meaning and a different origin. The designs employed serve not only to distinguish individuals but also communities from each other, for the fashions vary according to locality, a circumstance which, in a people otherwise so homogeneous as the Eskimo, in itself identifies the custom with a social organization corresponding in its main features with the gentile system of other aboriginal stocks. Most of the younger men and women have no tattooing and the practice is apparently dying out.

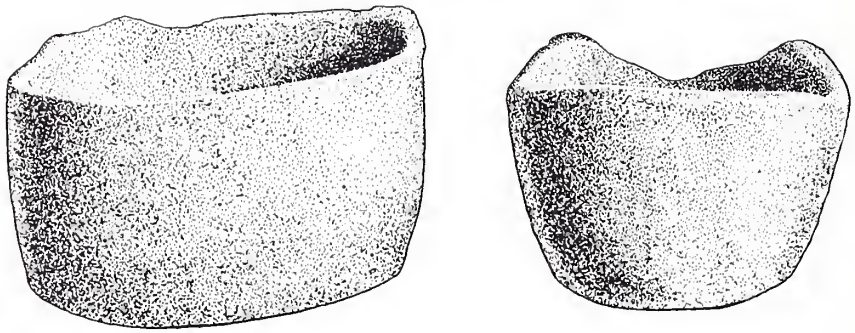
Pottery.

At the present time no pottery is made by the western Eskimo, but this branch of the stock in former times manufactured pottery lamps and cooking vessels, and Nelson witnessed its fabrication, which, according to his report, was widely spread during the period of his visit.[1] At the present time the art has completely died out and the knowledge of it is preserved only by the older people, who can remember the time when each village had one or two women engaged in the industry and when lamps and cooking vessels were still made of clay. The process of pottery making, as described to me by an old man at Cape Nome, was as follows. A quantity of clay, procured from certain localities on the tundra, was reduced to a smooth paste by mixing with walrus blood and kneading it with the hands. A quantity of sand from the beach was added, together with fine feathers from the breast of the ptarmigan. From this material the vessel was built up by means

[1] *Op. cit.* p. 201.

of the hands with the aid of a flat piece of wood shaped like a paddle. Sometimes the exterior was finished smooth and either left plain or decorated with incised lines and dots by means of a pointed stick. Instead of a smooth finish a pitted surface was sometimes produced by means of a roughly carved paddle or by wrapping the unbaked vessel in a piece of grass matting which left its impression. The finished product was then baked in a wood fire. Women, and not men, were engaged in this industry.[1] Murdoch, who was at Point Barrow between 1881 and 1883, found only "three fragments of pottery which had every appearance of great age and were said to be fragments of a kind of cooking pot."[2] He also found a tradition that pottery was used in earlier times and that it was "made from earth, bear's blood and feathers."

Occasionally at the present time a fragment of pottery or an old pot-



a *b*

Fig. 2. *a*, *b*, Pottery Lamp Stands, from northeastern Siberia.

tery dish is found in actual use, but such an incident is now very rare and is not likely to occur at all except in the region about the mouth of the Koskokwim River. On the other hand, the long abandoned village sites and burial places always contain a quantity of earthenware, either entire or in fragments. An examination of a number of specimens of this earthenware which I collected in 1905 shows that it is made of a gritty paste, dark gray in color and well baked. Three types of vessels are represented: jars, flat circular dishes and lamps.

Vessels of the first class (Pls. XXIII and XXIV) vary in size from four inches to twelve inches in height, with gradually expanding sides, which makes the top diameter somewhat larger than the bottom. This expansion is

[1] This account agrees with the description given by Nelson of the process as witnessed at St. Michael. Nelson also records the fact that the potters were women.

[2] *Ethnological Results of the Point Barrow Expedition*, by John Murdoch. Ninth Annual Report of the Bureau of American Ethnology, Washington. Government Printing Office, 1892.

sometimes varied by the contraction of a zone near the top, with a slightly flaring rim. The walls in the larger pieces are about one quarter of an inch in thickness with plain interior. The outside is either plain, as in Pl. XXIII Fig. 3; or decorated with incised lines and dots, as in Pl. XXIII Figs. 1, 2, 4 and 5; or it has a slightly corrugated appearance, as in Pl. XXIII Fig. 6; or it is pitted, as in Pl. XXIV Fig. 2. The color of the exterior surfaces of these jars, when not turned to a uniform black by age and use, is mottled gray and dark brown, owing to an unequal application of fire in the process of baking.

The flat circular dishes, which also vary in size, usually show the finest workmanship. In these it is the inside that is decorated while the outside is plain (Pl. XXII Figs. 1–5). The usual form of decoration consists of incised rings and dots. Two specimens from the Koskokwim River, in the Peabody Museum, of Harvard University, have as a totemic device a symbolic representation of the right whale incised in the center (Pl. XXII Figs. 2

a *b*

Fig. 3. *a*, Pottery Lamp Rest, from northeastern Siberia. *b*, Small Clay Pot, from northeastern Siberia.

and 5). The same device appears on a jar from the same region, also in the Peabody Museum (Pl. XXIV Fig. 1).

The round saucer-shaped vessels are confined to the region between the mouths of the Yukon and the Koskokwim, where they are still occasionally found in use though they are no longer made. Nelson classes them as lamps, but while they were frequently put to this use, they also served for a variety of purposes, and I have therefore classed them apart. Jars are found all the way from the Koskokwim to Bering strait, and beyond, to Point Barrow, with slight local variations which are indicated in the examples shown on Pls. XXIII and XXIV.

The pottery lamps of Alaska are shallow dishes, round or oblong in shape. The inside is either plain or provided with two elevated ridges running lengthwise near either side to hold the wicks. Each of these ridges is usually provided with a notch to allow the wicks to touch the oil, which is held in the middle of the dish. This type of lamp is more characteristic of St. Lawrence Island

and the east Siberian coast than of Alaska. According to Bogoras,[1] pottery lamps are still in use, not only among the Siberian Eskimo and the maritime Chukchee, but also among the inland Chukchee; but pottery cooking vessels, formerly employed among all of these peoples as well as among the Koryak of Baron Korff Bay, have now become obsolete, although "the old women still have a vivid recollection of the clay kettles that were used in former times."[2] A number of pieces from the east Siberian coast which I obtained from a trader in the summer of 1905, consists of lamps (Pl. XXV Figs. 1, 2, 3, 5, 7 and 8), lamp stands (Fig. 2 *a*, 2 *b*, and Fig. 3 *a*) a form which I have not found on the Alaskan side, and one small pot with curved sides and very thick walls (Fig. 3 *b* and Fig. 4). All these

Fig. 4. Section of pot shown in Fig. 3 *b*.

examples of Siberian ware are much thicker and heavier than the Alaskan pottery. It is made from a similar paste but is not so well baked, and none of the pieces show any attempt at decoration. Comparing the two lots, it is evident that the art of pottery making was more highly developed among the Alaskan Eskimo than among the Siberian members of the stock or the Chukchee. The oblong clay kettles of the Siberian people seem to have been copied from the soapstone pots of the Point Barrow Eskimo.[3]

Lamps of the triangular form or half moon shape, made from sandstone or limestone, are still in use among the King island Eskimo. Their use was probably contemporaneous with that of the clay lamp and was widespread on the Alaskan shore (Pl. XXVI).

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[1] *The Jessup North Pacific Expedition*, Memoir of the American Museum of Natural History. Vol. VII, *The Chuckchee*, by Waldemar Bogoras. Published by J. Brill. Leiden, 1904.

[2] Bogoras, *op. cit.* p. 186.

[3] *Ibid.*

String Games.

The string used is made of sinew, and about eighteen inches in length. The figures which I recorded were learned from the elders among the men and women. Boys seemed to lack knowledge of how to make them. Sometimes a song accompanies the movements of the fingers, as the figure is being developed, or a story is told to accompany the action, and it is probable that each of the figures has or had its corresponding song or story. The method which I used in recording the procedure in each case corresponds to that suggested by Haddon. Drawings of the finished patterns have been published[1] in another place, but are reproduced here in connection with the descriptions.

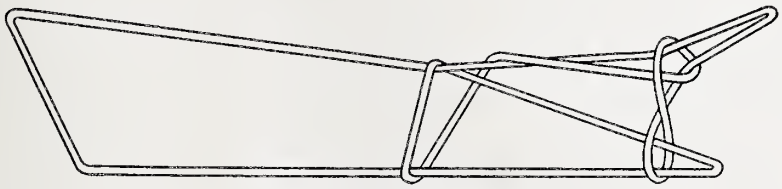


Fig. 5. The Rabbit.

Rabbit = *makadok*. Anvik Eskimo.—String over forefingers and thumbs. Take down thumb string with backs of little fingers under forefinger string. Catch forefinger string in hooks of little fingers. Bring hands together back to back. Pass right forefinger under the loop passing over forefinger and thumb of left, and pass left thumb under loop passing over forefinger and thumb of right. Draw apart, palms inward. Catch forefinger loops between forefingers and thumbs and throw thumb loops down over forefingers below forefinger loops. Transfer forefinger loops to thumbs and let go loops now on forefingers. Let go little finger of left hand. (Fig. 5.)

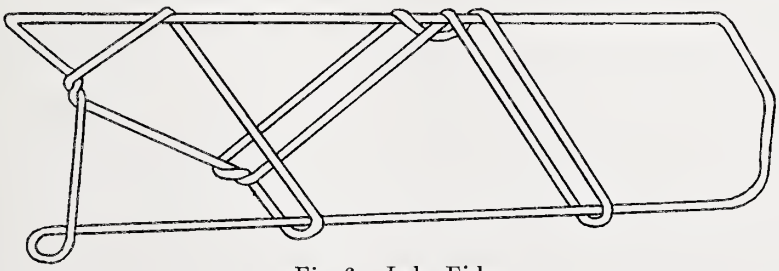


Fig. 6. Lake Fish.

Lake Fish = *nanvumchiseah*. Anvik Eskimo.—String on thumbs and little fingers (called first position). Take left palm string with hook of right

[1] *String Figures, a Study of Cat's Cradle in Many Lands*, by Caroline Furness Jayne. Charles Scribner's Sons. New York, 1906.

forefinger downward. Draw hands apart. Pass fore and middle fingers of left hand under near little finger string and take up far little finger string downward. Pass same two fingers inward over far thumb string and take between them the near thumb string. Straighten fingers out, holding the near thumb string looped over forefinger. Drop left thumb loop and take up from below with left thumb, near little finger string above cross made by far forefinger and far little finger strings, and below near forefinger string. Pass thumb over near forefinger string, under far little and far forefinger strings, down through loop of little finger string; straighten thumb out and take up with thumb through thumb loop near forefinger string, where it crosses thumb loop below. Drop left forefinger loop and right forefinger loop. Turn right hand once inward. (Fig. 6.)

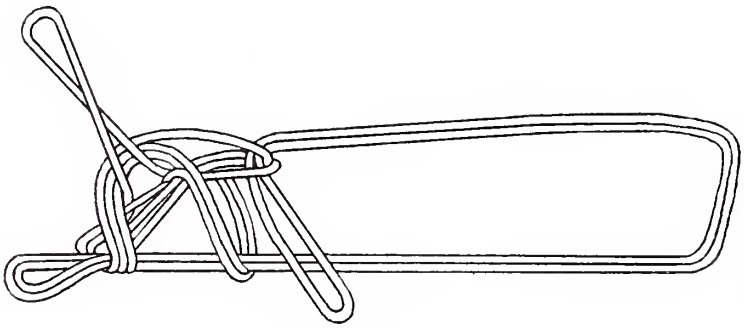


Fig. 7. The Dog.

Dog = *kaymuchta*.—Nunivak Island Eskimo. String over thumbs. Take both down over little fingers. Take up all palm strings on forefingers. Transfer left forefinger loop to right forefinger and right forefinger loop to left forefinger, causing the strings forming these loops to cross. Transfer left forefinger loop to thumb and left little finger loop to thumb. Pass left little finger beside left thumb from below and take two lower far thumbs strings on back of little finger. Passing little finger outside upper far thumb string, take upper far thumb string on hook of little finger and bring out underneath strings on back of little finger. Pass left forefinger downward under inner near thumb string and over outer near thumb string. Bring up through inner thumb loop and release thumb. Pass thumb outward through right little finger loop, taking up with backward motion of thumb that side of diamond and string crossing middle of diamond. Take left forefinger loop through left thumb loop on thumb, slipping thumb loop. Release right thumb and little finger. By passing the hand through the loop that remains on the right forefinger and drawing out, the leash is made taut. By drawing harder the dog is released. (Fig. 7.)

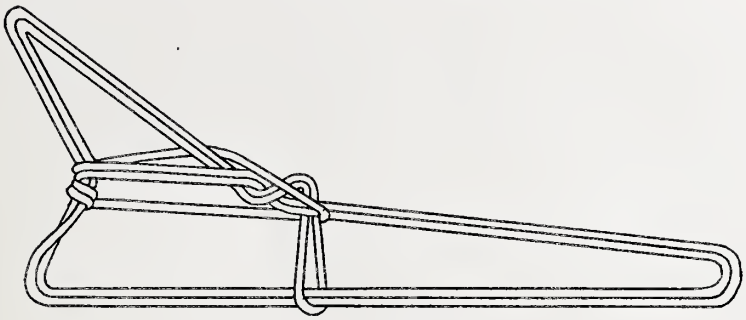


Fig. 8. No Name.

No Name. King Island Eskimo.—String over thumbs and forefingers. Grasp with other three fingers. Take up middle with thumbs and forefingers through loops, thus making two large loops, grasp a loop in each hand and let ends come together at middle. Lay right hand main strings across left forefinger so that the strings cross above the forefinger and also below. Pass right forefinger through the loop below the cross under left forefinger, and back above the cross, taking the crossing strings on the hook of right forefinger. Pass left thumb through cross above left forefinger and draw tight. The string is now held on the right forefinger and the left thumb. Pass left little finger up through left thumb loop and bring down inner far thumb string with back of little finger, pass outside outer far thumb string, and catch same with hook of little finger. Pass left forefinger under inner near thumb string and over outer near thumb string, take up this string on forefinger, letting go left thumb. Transfer right hand loops from forefinger to thumb. Take up with left hand inner turn of right thumb loop between near and far middle strings, pass to right hand, dropping other right hand strings and draw out. (Fig. 8.)

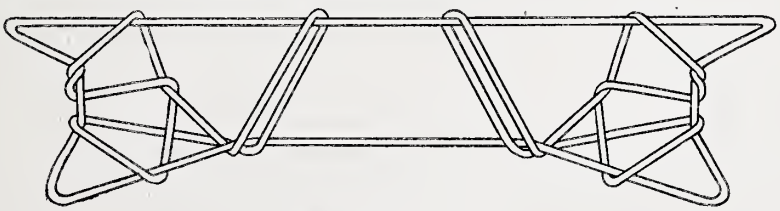


Fig. 9. The Arms.

Arms=*moguk* and Legs=*eruk*. Nunivak Island Eskimo.—Opening A. Take up near little finger string with thumbs and far thumb strings with middle fingers, both over forefinger strings. Slip thumbs and transfer forefinger and middle finger loops to thumbs. Pass forefingers downward

through little finger loops and take up little finger loops on forefingers, the near and far strings being thus reversed. Pass little fingers up through thumb loops and grasp near forefinger string with hooks of little fingers. Pass middle fingers through forefinger loops beside forefingers and grasp upper near thumb string between fore and middle finger of each hand. Turn these fingers outward through forefinger loops so that the upper near thumb string becomes looped over the forefingers. At the same time the original forefinger loops are held by these strings now upon the forefingers. Slip the upper thumb loops and take up the left lower near thumb string with the right thumb and the right lower near thumb string with the left thumb. Pass forefinger strings (loops) through thumb loops and take again on forefingers releasing thumbs. Draw out. (Fig. 9.)

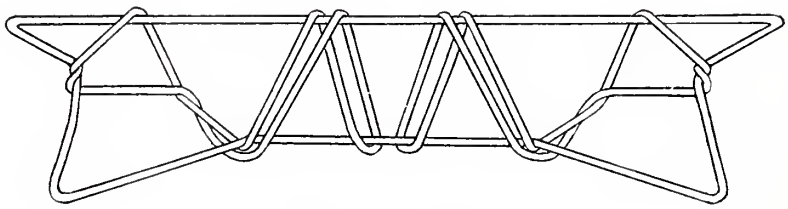


Fig. 10. The Legs.

To make legs, take up round loops with thumbs and pass forefinger loops through thumb loops and take on thumbs. Draw out. (Fig. 10.) Obtained from Keouiouk.

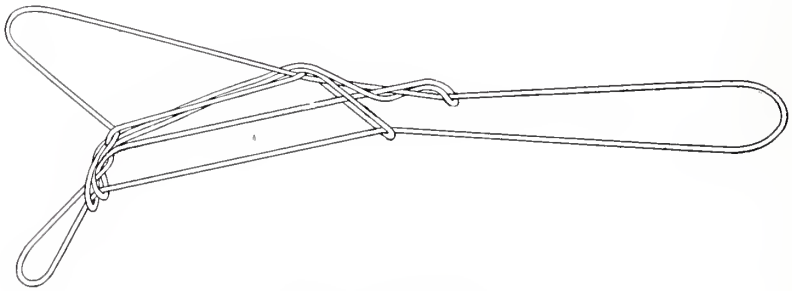


Fig. 11. Wolverine.

Wolverine=*koftsik*. Nunivak Island Eskimo.—String on thumbs and little fingers. Take up left palm string with right forefinger and right palm string with left forefinger. Exchange forefinger loops, passing right loop through left. Transfer left fore and little finger loops to thumb. Pass left little finger up besides thumb and bring outside far right little finger string. Grasp far right little finger string with hook of left little finger and draw out Pass left forefinger down through left thumb loops and up over near right thumb string, taking up this string on forefinger and releasing thumb. Pass

left thumb through right little finger loop and take up that side of diamond on left thumb. Pass left forefinger loop through left thumb loop and take up on thumb, releasing forefinger. Drop right thumb and little finger loops and draw out. (Fig. 11.) Learned from Keouiouk.

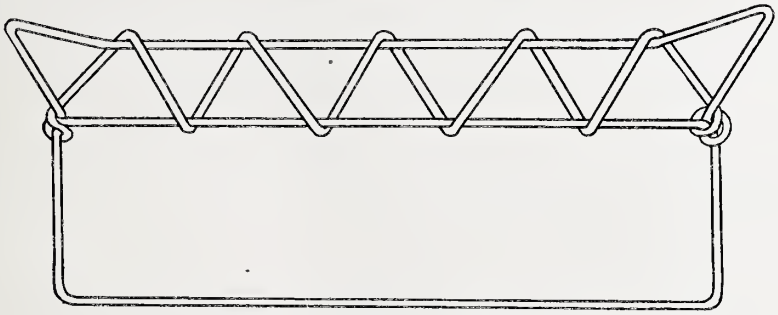


Fig. 12. The Clothes Line.

Clothes Line=*iniarat.* Cape Prince of Wales Eskimo.—String over thumbs and little fingers. Take up far string with right thumb inward and far right little finger string with left thumb (inward) outside of left little finger string. Slip little fingers. Pass little fingers up beside thumbs and take up inner far thumb string, passing outside of outer far thumb string. Catch this on hooks of little fingers. Pass forefingers over lower near thumb string and take up with an outward turn. Slip thumbs and draw out. Take up with thumbs right and left sides of triangle, and take forefinger loops on thumbs, through thumb loops. Release forefingers and transfer thumb loops to forefingers. Insert thumbs through loops at right and left below from the inside and take up. Throw thumb loops over forefingers and take forefinger loops on thumbs through thumb loops. Release forefingers, and transfer thumb loops to forefingers. Insert thumbs over lower string and release little finger. Draw out. (Fig. 12.)

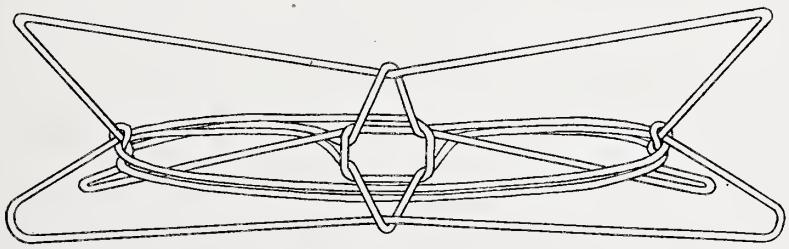


Fig. 13. The Kayak.

The Kayak. King Island Eskimo.—Opening A. Take up far forefinger strings with thumbs under near forefinger strings. Release forefingers

Take little finger loops on thumbs. Pass little fingers up beside thumbs and bring outside outer far thumb string. Catch this with hooks of little fingers. Pass forefingers downward beside thumbs and up over near free thumb string, taking up this on forefingers with outward turn, releasing thumbs. Transfer little finger loops to thumbs, inserting thumbs upward. Take strings that cross thumb loops on hooks of little fingers. Take up left near thumb string on right thumb and right near thumb string with left thumb. Take up near forefinger string with thumbs through thumb loops. Release forefingers. Lay down the string, reversing lower and upper sides. Take up lower loops on hooks of little fingers (from below). Take up near upper loops on thumbs (from above), and take up far upper loops with forefingers (from below). Draw out. (Fig. 13.)

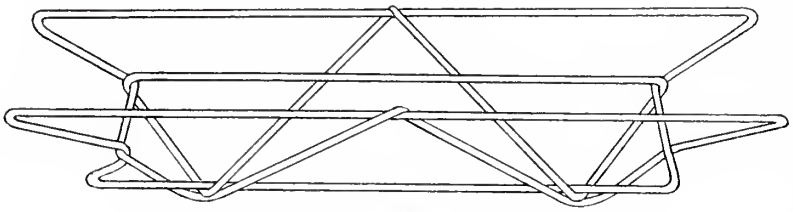


Fig. 14. Mountains.

Mountains = *tituchtak*. Saint Michael Eskimo.—Opening A. Take up far forefinger strings with thumbs under near forefinger strings. Release forefingers. Take little finger loops on thumbs. Pass little fingers up beside thumbs, and pass outside free far thumb string. Take free far thumb string in hooks of little fingers. Pass forefingers under the lowest of the three near thumb strings and take up, releasing this one string from thumbs. Transfer free near thumb string to far side of thumbs. Draw out. (Fig. 14.)

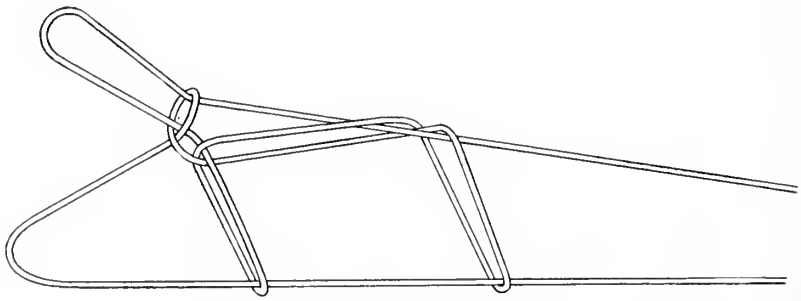


Fig. 15. Caribou.

Caribou = *tuktuk*. Saint Michael Eskimo.—Opening A. Take up near right thumb string with right forefinger, backward, under all other strings,

releasing right thumb. Turn right forefinger once inward. Slip right thumb up beside forefinger and take up left forefinger loop through right forefinger loop. Releasing this last mentioned loop, replace loop on left forefinger and release left thumb. Draw out. (Fig. 15.)

THE TRAP=*keezook*. CAPE PRINCE OF WALES ESKIMO.—String on thumbs and forefingers. Grasp both strings with the other three fingers of each hand. Bring hands together, palms down, and take up string, passing between forefinger and thumb of left hand with right thumb and right hand string with left thumb. Turn forefingers inward through thumb loops and take thumb loops up on forefingers, releasing forefinger loops. The string is now held on fore and little fingers. Take down near forefinger strings with thumbs and take up on thumbs both near little finger strings. Release forefingers. Take up with forefingers the double strings that pass round the far thumb strings. Slip thumbs and release little fingers. Turn upside down and insert the other three fingers with forefingers and draw out.

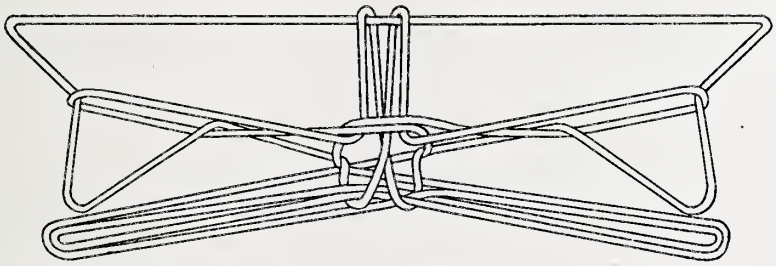


Fig. 16. The Ship.

THE SHIP=*umiakbuk*. KING ISLAND ESKIMO.—Opening A. Take near little finger strings on hooks of forefingers. Turn forefingers downward and bring up between far thumb and near forefinger string. Straighten forefingers out. Insert middle and third fingers beside forefingers, through loop. Pass forefingers over near thumb string and take up this string on forefingers. Take up far little finger string with thumbs through thumb loops, letting latter slip. Exchange right and left little finger loops, passing one through the other. Pass little fingers up beside thumbs and take thumb loops on little fingers. Transfer forefinger loops to thumbs and pick up with fore and middle fingers the loops in the center that pass around both thumb strings. Draw these out and pass forefingers over near thumb strings, taking up near thumb strings on forefingers through the loops which were picked up on fore and middle fingers and which now take care of themselves. Draw out. Pull up with teeth the portion in center held on the near forefinger string. (Fig. 16.)

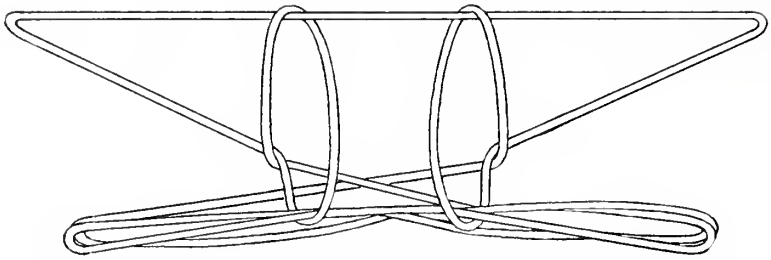


Fig. 17. Two Men.

To make the two men from the ship, release thumbs and draw out. (Fig. 17.)

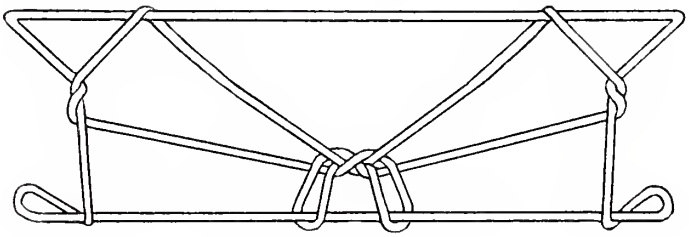


Fig. 18. Sea Gull.

The Sea Gull=*t'keyack*. Nunivak Island Eskimo.—Opening A. Take up near thumb string with forefinger backward under all loops, releasing thumbs. Bring down lower near forefinger string on thumbs and take up far little finger string on thumbs. Bring down outer near forefinger string with thumbs and passing thumbs over near little finger string, take up with a turn of the thumbs. Turn thumbs inward and take up lower near forefinger string through thumb loops on thumb. Release forefingers and draw out. (Fig. 18.)

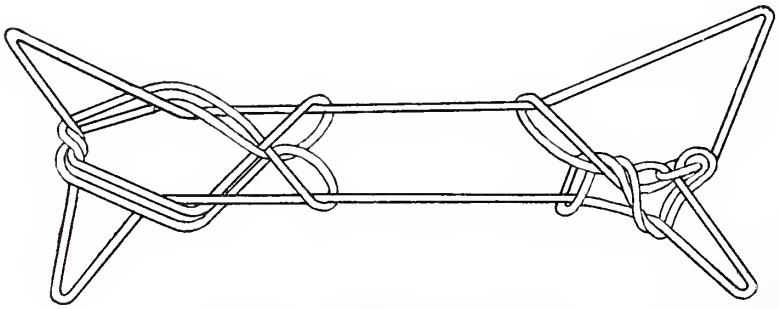


Fig. 19. The Whale and the Fox.

The Fox=*tezeuk*, and the Whale=*achvuk*. King Island Eskimo.-

String on thumbs and forefingers. Near thumb string down with backs of little fingers under far forefinger string. Take forefinger string with hooks of little fingers. Bring hands together palm downward and take string passing from thumb to forefinger of left hand with right thumb downward. Take same string of right hand with left thumb in same way. Draw out.

Take up left little finger loop with left thumb from far side through thumb loop. Transfer left thumb loop to hook of left little finger and release right forefinger. Pass left thumb through the right thumb loop and take up on hook of thumb the near right little finger string below near right thumb string. Take up left little finger loop with thumb, through thumb loop, releasing left little finger. Transfer left thumb loop to hook of little finger. Pass left thumb through the triangle about left little finger loop and take up the upper side of this triangle (two strings) with thumb. Pass left thumb under near left forefinger string and take up left forefinger loop with thumb through thumb loop, releasing left forefinger. Release right thumb and take up with right thumb the near left thumb string where it passes between the two sets of loops that encircle it. Draw out. Release left little finger and draw out till the "fox" has covered about two thirds of the distance between the left hand and the right. There are now two loops on the right hand (thumb and hook of little finger) and one loop on the left. Bring palms of hands to face each other and pass left hand loop between two right hand loops and catch with hook of right middle finger, leaving two hanging loops on the far side. Take these two falling loops on left fore and little fingers (hooks). Bring the right middle finger loop through between the right thumb and little finger loops to near side and take on hook of left middle finger. See that far and near strings of left correspond to those of right. Take left middle finger loop on left forefinger, and take left little finger loop on left forefinger. Insert left middle finger with left forefinger to hold loop open. Insert left thumb in this loop from near side under the two inner far string, and over the outer far string, taking this string up on thumb through the loop. Insert left little finger in same loop from far side, pass it over the two inner near strings and under the outer near string, taking this string up on little finger through the loop. Transfer left thumb loop to left forefinger, making near string on left correspond to near string on right. Lay the string down. Pick up with right hand the two strings that cross the vertical loops in the center. Pass the upper under the lower, making an upper and a lower loop. Pass the right forefinger loop through the upper loop from far side. Pass the right little finger loop through the lower loop from the near side. Take up again on the little fingers and thumbs and draw out. (Fig. 19.) The whale's carcase is stranded on the beach and the fox eats it; but being discovered he runs away.

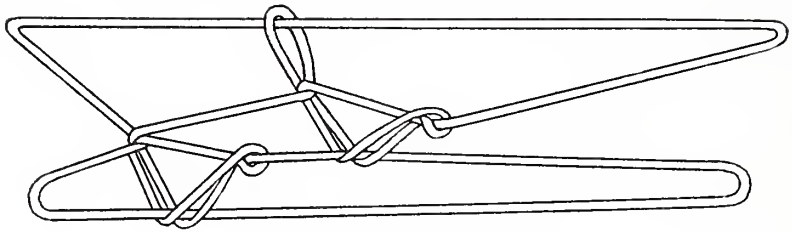


Fig. 20. Two Ptarmigans.

Two Ptarmigans = *mugalonik okhozgiuk.* Cape Prince of Wales Eskimo.—String over left thumb and little finger. Pick up left far little finger string with right hand near left hand. Bring inwards and pass over left third finger twice, making two turns, bring down between left third and little fingers. Slip all loops from third. Pass near little finger string between left thumb and forefinger, crossing thumb string and making a slack loop on the palm. Take near left thumb string from thumb and pass over left little finger. Bring inward and pass over third finger; take two turns and pass down between third and little fingers. Slip all loops from third. Remove the two inner loops from little finger over the two outer loops. Reverse near and far thumb strings and pass the far thumb string over the little finger and slip the two loops now on the little finger over this, taking them off. Insert the right thumb and little finger in the hanging loops formed by the near left thumb string and the far little finger string. Draw out. (Fig. 20.)

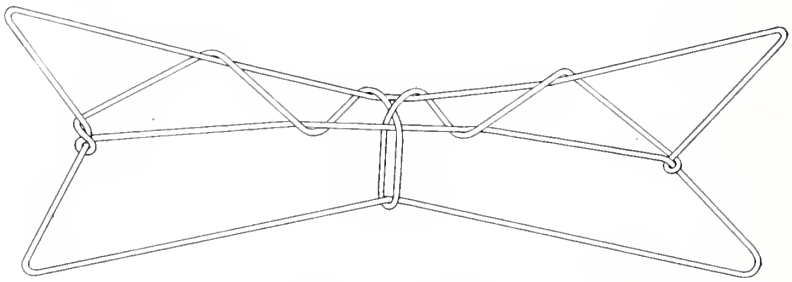


Fig. 21. The Stairs.

Stairs = *tutumukaligat.* Cape Prince of Wales Eskimo.—String on thumbs and little fingers. Pass forefingers over thumb string and take up with a half turn. Take up with the right thumb the left palm string that passes from the near side of the thumb to the far side of the forefinger, and take up with the left thumb the corresponding string on the right hand. Take the far right thumb—far left forefinger string on hooks of little fingers. Throw the thumb loops over the little finger strings. Pass the thumbs under the far little finger string and under the string that is looped over the little

finger string, taking up this string on the thumbs. Throw thumb loops over forefinger loops and take forefinger loops on thumbs. Release forefingers. Transfer thumb loops to forefigners. Pass thumbs through the round loops at the right and left below from the inside and take up the far side of these loops on the thumbs. Throw thumb loops over forefingers and take up the forefinger loops on the thumbs, releasing forefingers. Transfer thumb loops to forefingers. Pass thumbs over the far little finger string, to right and left of center loop. Release little fingers and draw out. (Fig. 21.)

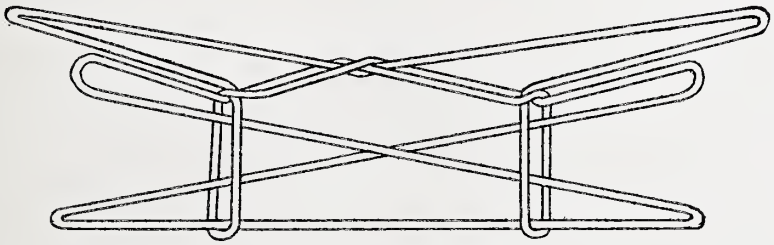


Fig. 22. Siberian House.

Siberian House = *kochlinee.* Diomede Island Eskimo.—Opening A. Turn the hands thumbs outward and close the fingers over all the strings except the near thumb string. Throw the near thumb string over the backs of the hands and over the far side of the little fingers. Open the hands and take down with the right thumb the left forefinger string and with the left thumb the right forefinger string. Take up with the thumbs the string that passes between the far sides of the hands. Slip the loops on the backs of the hands over the ends of the fingers to the palms and draw out. (Fig. 22.)

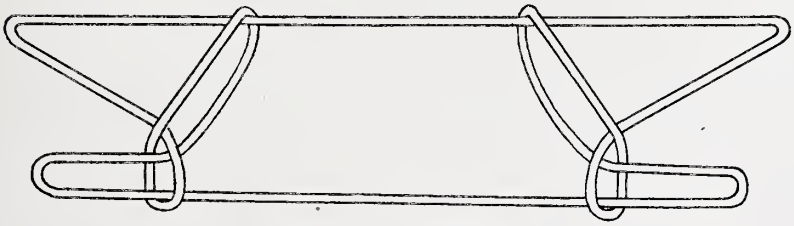


Fig. 23. Two Eskimo.

A second development of this figure, "Two Eskimo running away" = *mugalonik enuk okparuktuk,* is made by releasing the forefingers and drawing the hands apart. (Fig. 23.)

G. B. Gordon.

LIST OF PLATES

ACCOMPANYING NOTES ON THE WESTERN ESKIMO.

Unless otherwise stated, the photographs and drawings in this article are by the author.

PLATE IX. 1. Tattooing on the face of an Eskimo woman, in the vicinity of Bering Strait, Alaska.

2. Tattooing on the face of an Eskimo woman, in the vicinity of Bering Strait, Alaska.

3. Tattooing on the face of an Eskimo man, in the vicinity of Bering Strait, Alaska.

4. Tattooing on the face of an Eskimo man, in the vicinity of Bering Strait, Alaska.

5. Tattooing on the face of an Eskimo woman, on St. Lawrence Island.

6. Tattooing on the face of an Eskimo man, on Diomede Island, Bering Strait.

PLATE X. 1. Left forearm of an Eskimo woman, on King Island, Alaska, showing tattoo marks.

2. Left forearm of an Eskimo woman, on King Island, Alaska, showing tattoo marks.

3, 4. Left and right forearms of an Eskimo woman, of King Island, Alaska, showing tattoo marks.

PLATE XI. 1, 2, 3, 4. Development of the designs on the arms of King Island women, shown on Plate X.

PLATE XII. A scene on the shore of St. Michael Island, Alaska, showing an Eskimo grave. The body is placed in a rough box laid on the ground and covered with a pile of driftwood.

PLATE XIII. Keouiouk, an Eskimo woman of the Nunivagmut, the inhabitants of Nunivak Island, Alaska.

PLATE XIV. 1. An Eskimo man, on King Island, Alaska. From this man was obtained the Cat's Cradle known as the Whale and the Fox.

2. An Eskimo man, on Nunivak Island, Alaska.

PLATE XV. 1. An Eskimo man, in the vicinity of Bering Strait, Alaska. *Photo. by F. H. Nowell.*

2. An Eskimo man, in the vicinity of Bering Strait, Alaska. *Photo. by F. H. Nowell.*

PLATE XVI. 1. An Eskimo woman, in the vicinity of Bering Strait, Alaska. *Photo. by B. B. Dobbs.*

2. An Eskimo woman, in the vicinity of Bering Strait, Alaska. *Photo. by B. B. Dobbs.*

PLATE XVII. 1. An Eskimo woman, in the vicinity of Bering Strait, Alaska, profile. *Photo. by F. H. Nowell.*

2. Same subject as figure 1, full face. *Photo. by F. H. Nowell.*

PLATE XVIII. 1. An Eskimo girl, in the vicinity of Bering Strait, Alaska. *Photo. by F. H. Nowell.*

2. An Eskimo woman, in the vicinity of Bering Strait, Alaska. *Photo. by B. B. Dobbs.*

PLATE XIX. 1. An Eskimo man, at the mouth of the Yukon River.

2. An Eskimo girl, aged six years, daughter of the man shown in figure 1.

PLATE XX. Two Eskimo women with their children, on King Island, Alaska. Both the arms of one woman and the left arm of the other are tattooed.

PLATE XXI. 1. An Eskimoized Athapascan, at Anvik, on the lower Yukon. This man was educated at the Episcopal mission, at Anvik.

2. Same subject as figure 1, profile.

PLATE XXII. 1. Pottery dish, from the lower Koskokwim River, Alaska. Diam., 3½ in. *Reproduced by courtesy of the Peabody Museum of Harvard.*

2. Pottery dish, from the lower Koskokwim River, Alaska. Diam., 4 in. Pictograph of the Right Whale. *Reproduced by courtesy of the Peabody Museum of Harvard.*

3. Pottery dish, from the lower Koskokwim River, Alaska. Diam., 4¼ in. Museum No., N. A. 730.

4. Pottery dish, from the lower Koskokwim River. Diam., 6½ in. Museum No., N. A. 729.

5. Pottery dish, from the lower Koskokwim River, Alaska. Diam., 9 in. Pictograph of the Right Whale. *Reproduced by courtesy of the Peabody Museum of Harvard.*

6. Pottery dish, lower Koskokwim River, Alaska. Diam., 11¼ in. Museum No., N. A. 717.

7. Pottery lamp, lower Koskokwim River, Alaska. Greatest diam., 9 in. Museum No., N. A. 743.

PLATE XXIII. 1. Pottery jar, from the lower Koskokwim River, Alaska. Height, 4 in. *Reproduced by courtesy of the Peabody Museum of Harvard.*

2. Pottery jar, from the lower Koskokwim River, Alaska. Height, 2¼ in. Museum No., N. A. 728.

3. Pottery jar, from the lower Koskokwim River, Alaska. Height, 6¾ in. Museum No., N. A. 725.

4. Pottery jar, from the lower Yukon River, Alaska. Height, 4 in. Museum No., N. A. 726.

5. Pottery jar, from the lower Koskokwim River, Alaska. Height, 6¾ in. *Reproduced by courtesy of the Peabody Museum of Harvard.*

6. Pottery jar, from Unalakleet, on Norton Sound, Alaska. Height, 8½ in., elliptical mouth. Diameter of mouth, 6½ and 8¼ in. Museum No., N. A. 723.

PLATE XXIV. 1. Pottery jar, from the Koskokwim River. Height, 5½ in. Pictograph of the Right Whale on the side. *Reproduced by courtesy of the Peabody Museum of Harvard.*

2. Pottery jar, from the vicinity of Bering Strait. Height, 12¾ in. Diam. of mouth, 10½ in. Museum No., N. A. 724.

3. Pottery jar, from the lower Koskokwim River, Alaska. Height, 3½ in. Museum No., N. A. 727.

PLATE XXV. 1. Pottery lamp, Northeastern Siberia. 6¾ in. x 8 in. Museum No., N. A. 734.

2. Pottery lamp, from Northeastern Siberia. 8¾ in. x 9 in. Museum No., N. A. 735.

3. Pottery lamp, from Northeastern Siberia. 9 in. x 10 in. Museum No., N. A. 733.

4. Pottery lamp, from Saint Lawrence Island. 9 in. x 10¾ in. Museum No., N. A. 731.

5. Pottery lamp, from Northeastern Siberia. 9 in. x 11½ in. Museum No., N. A. 732.

6. Pottery lamp, Norton Sound, Alaska. 12½ in. x 14½ in. Museum No., N. A. 736.

7. Pottery lamp, Northeastern Siberia. 9 in. x 10¼ in. Museum No., N. A. 733.

8. Pottery lamp, Northeastern Siberia. 10¾ in. x 13 in. Museum No., N. A. 731.

9. Pottery lamp, Cape Prince of Wales, Alaska. 10½ in. x 15¼ in. Museum No., N. A. 719.

PLATE XXVI. 1. Stone lamp, from King Island, Alaska. 3⅛ in. x 3⅝ in. Museum No., N. A. 715.

2. Stone lamp, from King Island, Alaska. 4¾ in. x 7¼ in. Museum No., N. A. 714.

3. Stone lamp, King Island. 5½ in. x 11 in. Museum No., N. A. 713.

4. Stone lamp, King Island, Alaska. 6¾ in. x 17¼ in. Museum No., N. A. 712.

5. Stone lamp, King Island, Alaska. 6¼ in. x 11¼ in. Museum No., N. A. 716.

6. Stone lamp, Unalakleet, Norton Sound, Alaska. 5¼ in. x 7⅞ in. Museum No. 742.

PLATE IX.

1. Tattooing on the face of an Eskimo woman, in the vicinity of Bering Strait, Alaska.

2. Tattooing on the face of an Eskimo woman, in the vicinity of Bering Strait, Alaska.

3. Tattooing on the face of an Eskimo man in the vicinity of Bering Strait, Alaska.

4. Tattooing on the face of an Eskimo man, in the vicinity of Bering Strait, Alaska.

5. Tattooing on the face of an Eskimo woman, on St. Lawrence Island.

6. Tattooing on the face of an Eskimo man, on Diomede Island, Bering Strait.

PLATE IX

1. Tattooing on the face of an Eskimo woman, in the vicinity of Bering Strait, Alaska.

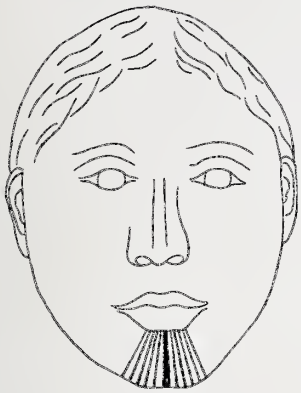
2. Tattooing on the face of an Eskimo woman, in the vicinity of Bering Strait, Alaska.

3. Tattooing on the face of an Eskimo man, in the vicinity of Bering Strait, Alaska.

4. Tattooing on the face of an Eskimo man, in the vicinity of Bering Strait, Alaska.

5. Tattooing on the face of an Eskimo woman, on St. Lawrence Island.

6. Tattooing on the face of an Eskimo man, on Diomede Island, Bering Strait.



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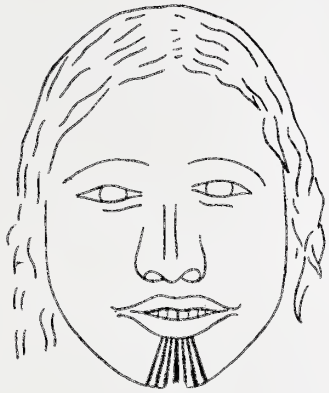

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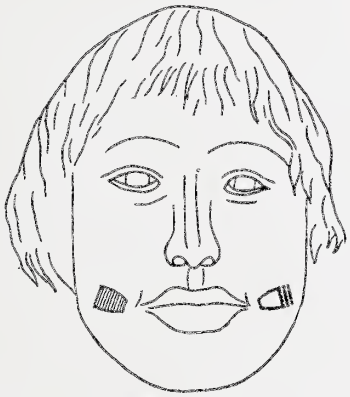

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6

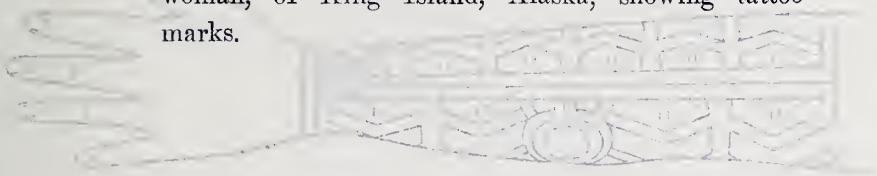
TATTOOING OF THE FACE. WESTERN ESKIMO.

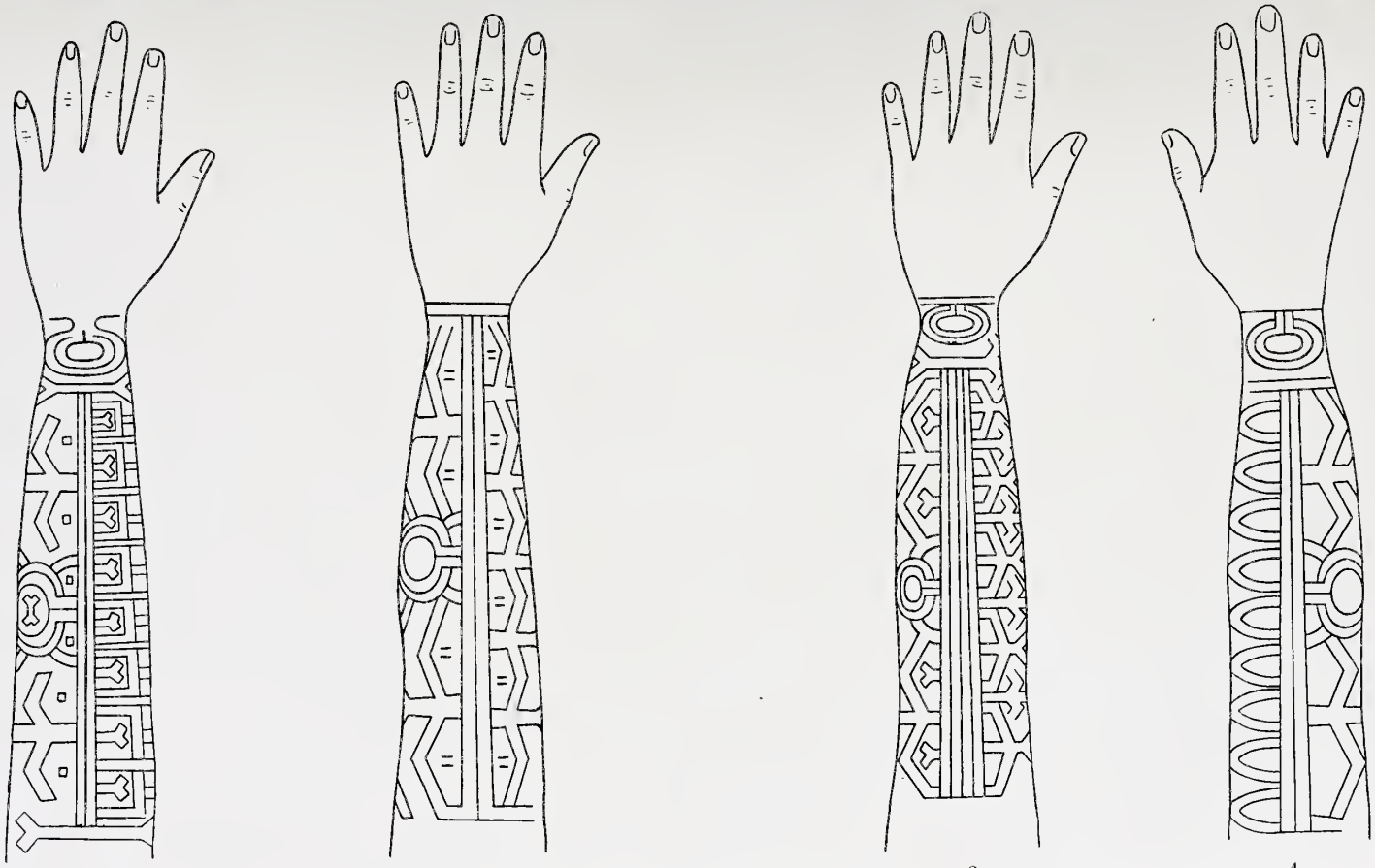
PLATE X.

1. Left forearm of an Eskimo woman on King Island, Alaska, showing tattoo marks.

2. Left forearm of an Eskimo woman on King Island, Alaska, showing tattoo marks.

3, 4. Left and right forearms of an Eskimo woman, of King Island, Alaska, showing tattoo marks.





1 2 3 4

TATTOOED ARMS OF KING ISLAND WOMEN.

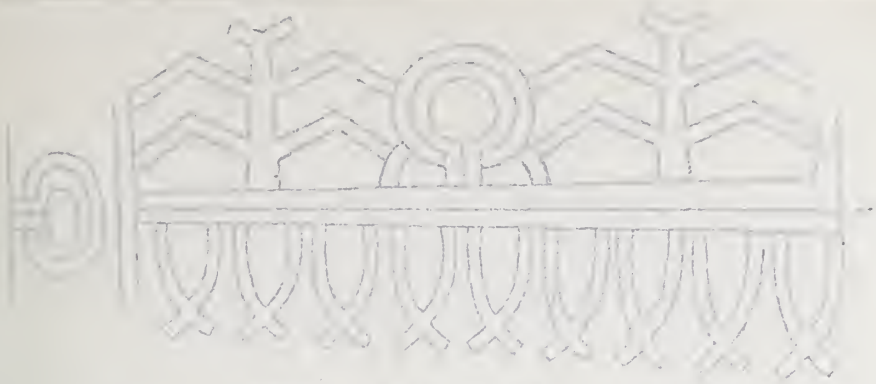
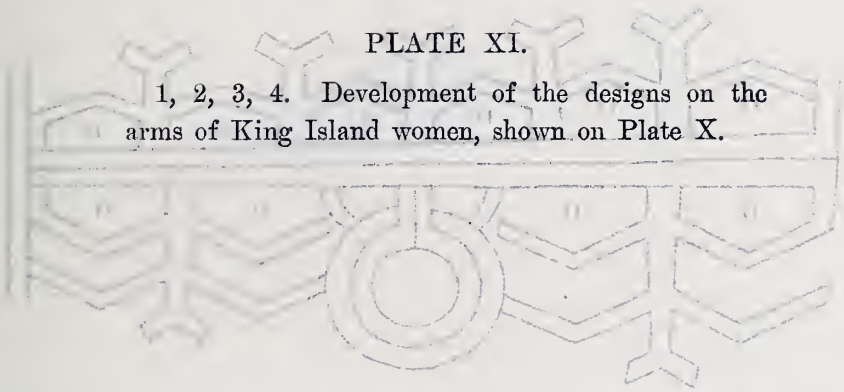


PLATE XI.

1, 2, 3, 4. Development of the designs on the arms of King Island women, shown on Plate X.



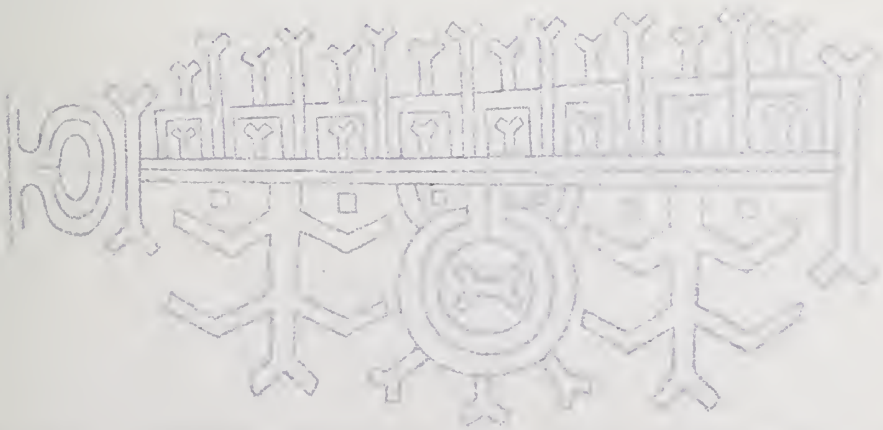
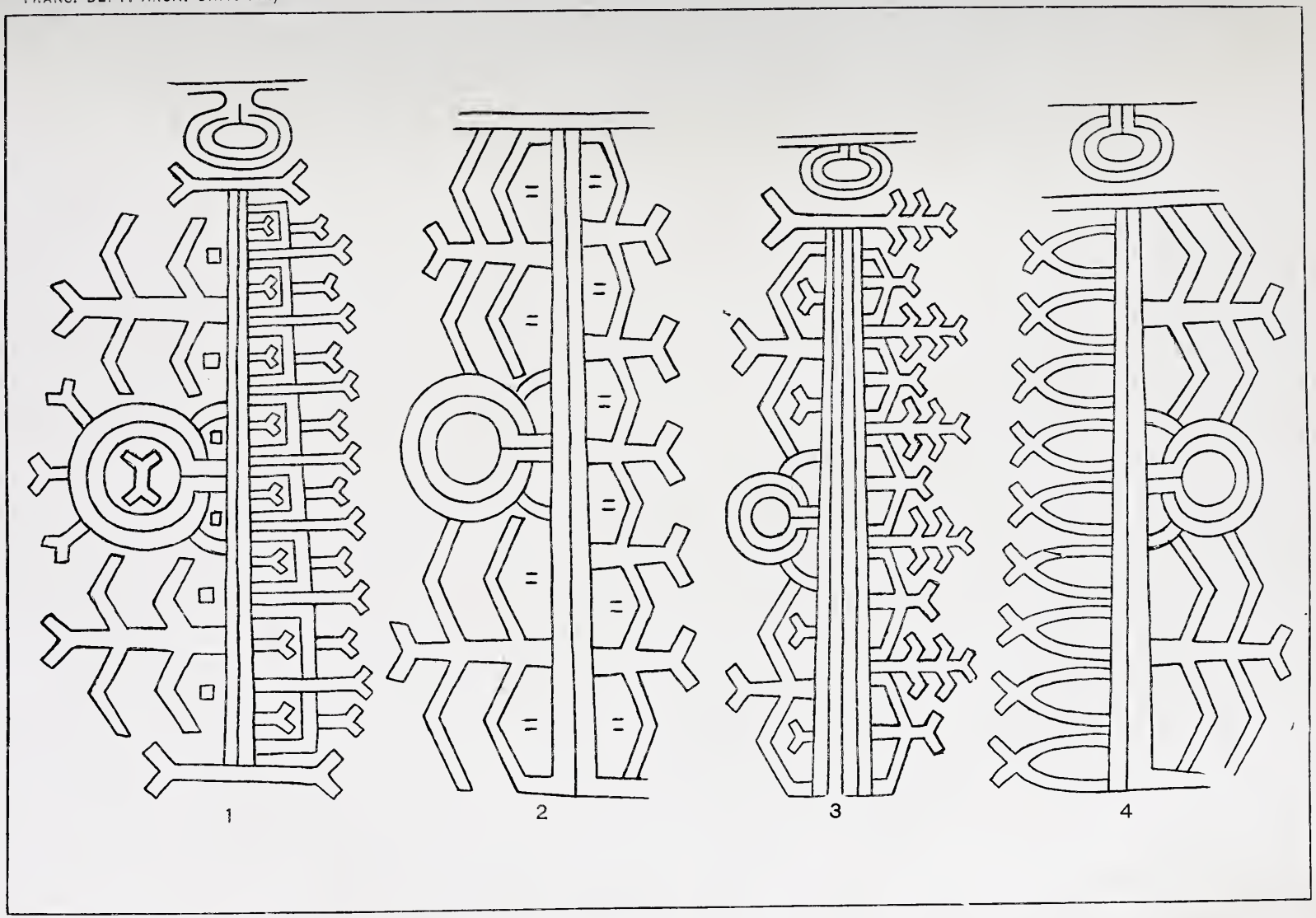


PLATE XI.

1, 2, 3, 4. Development of the design on the arms of King Island women, shown on Plate X.



Designs Tattooed on the Arms of King Island Women.

PLATE XII.

A scene on the shore of St. Michael Island, Alaska, showing an Eskimo grave. The body is placed in a rough box laid on the ground and covered with a pile of driftwood.

An Eskimo Grave on Saint Michael Island, Alaska.

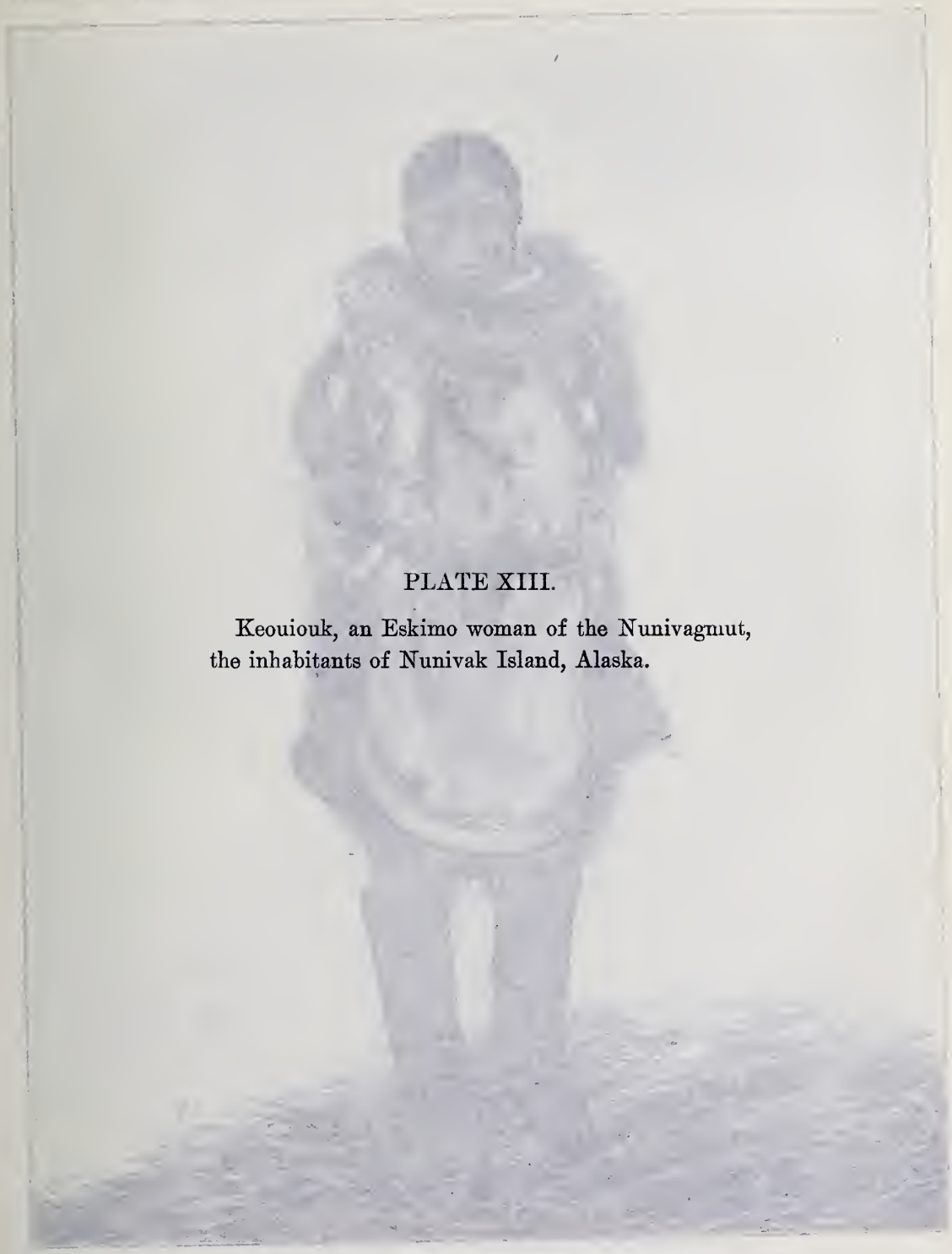


PLATE XIII.

Keouiouk, an Eskimo woman of the Nunivagmut, the inhabitants of Nunivak Island, Alaska.

PLATE XIII.

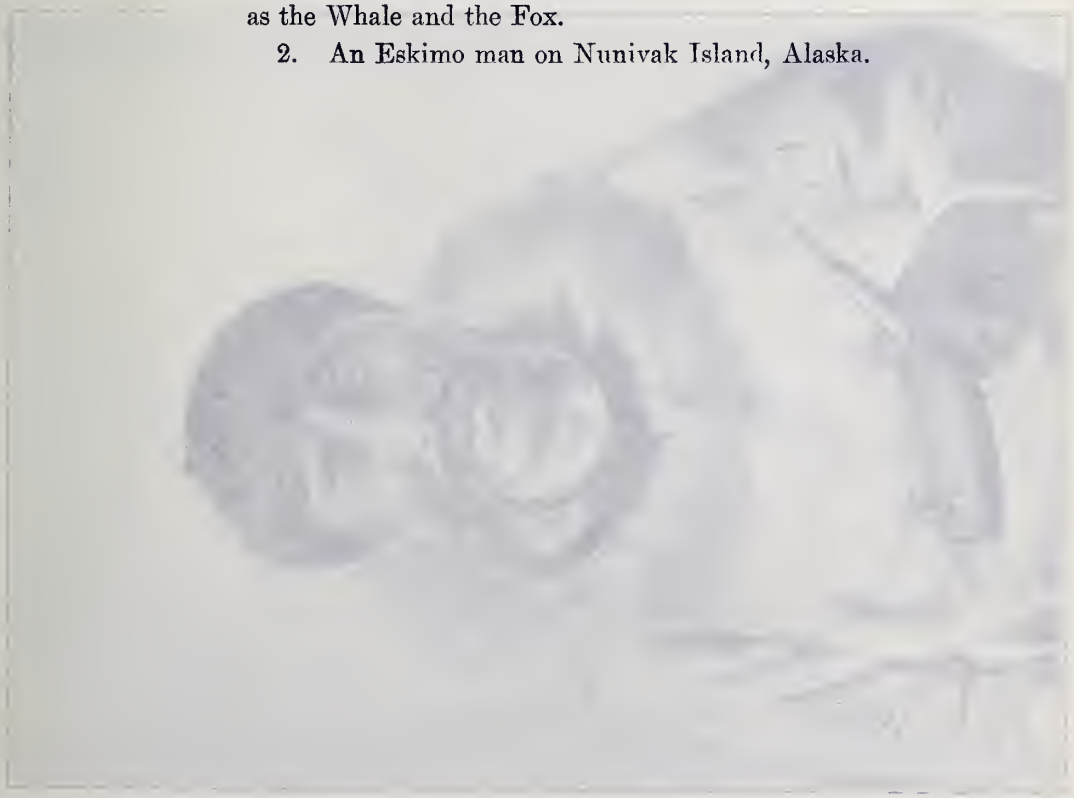
Keeniouk, an Eskimo woman of the Nunivagmut, the inhabitants of Nunivak Island, Alaska.

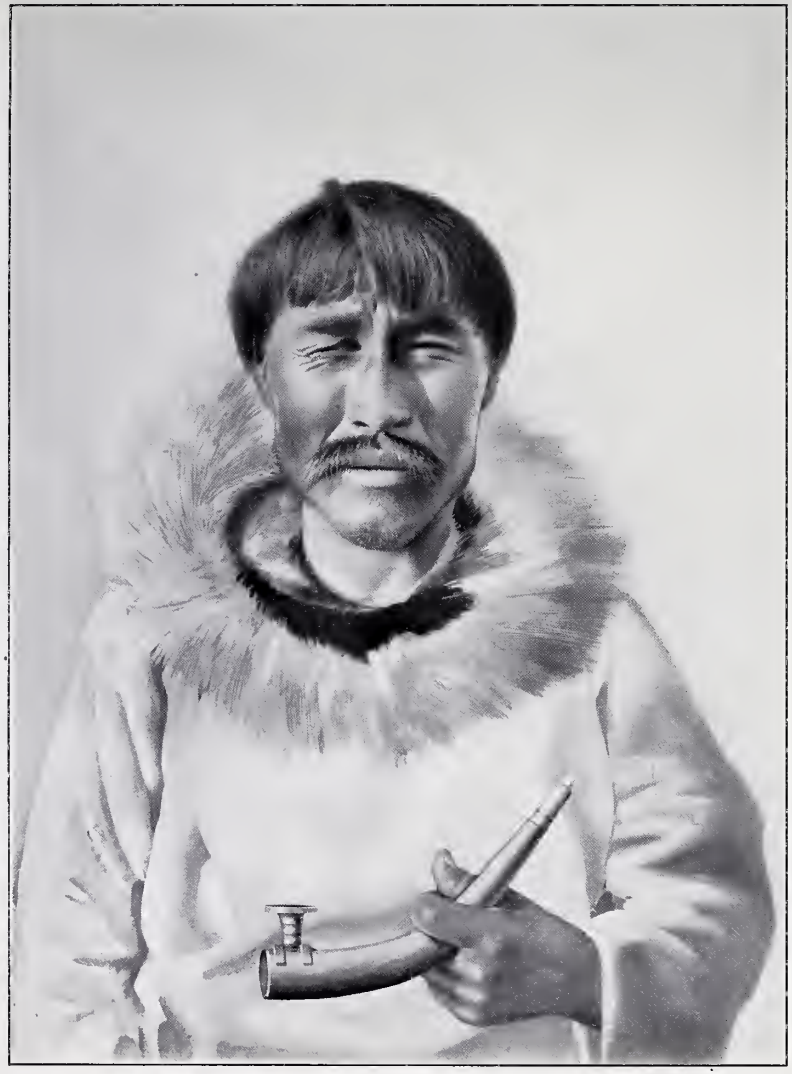
Keouiouk, an Eskimo Woman of the Nunivagmut.

PLATE XIV.

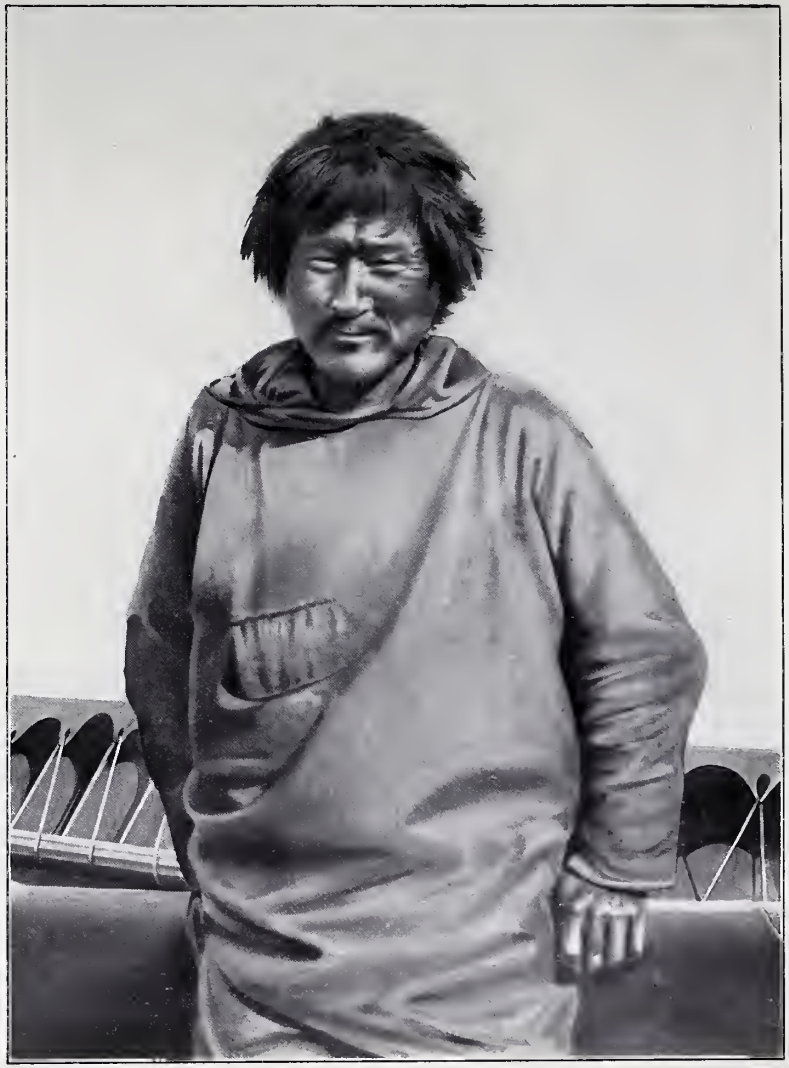
1. An Eskimo man, on King Island, Alaska. From this man was obtained the Cat's Cradle known as the Whale and the Fox.

2. An Eskimo man on Nunivak Island, Alaska.





1
A King Island Eskimo.

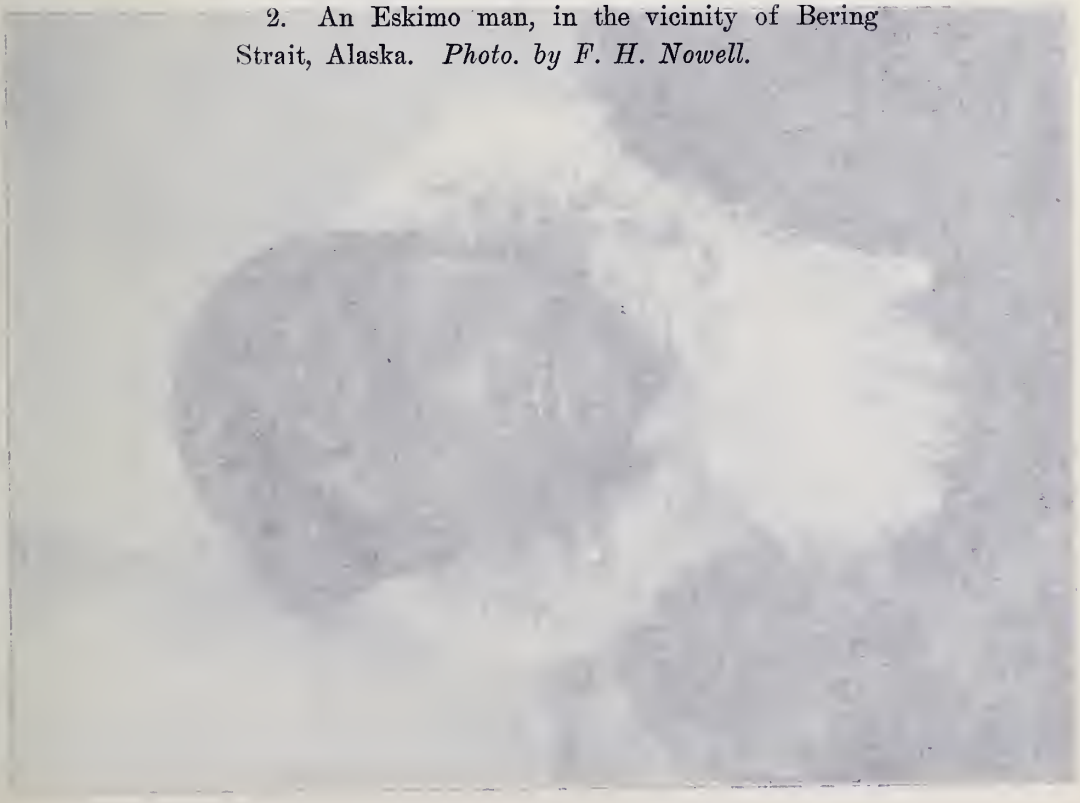


2
A Nunivak Island Eskimo.

PLATE XV.

1. An Eskimo man, in the vicinity of Bering Strait, Alaska. *Photo. by F. H. Nowell.*

2. An Eskimo man, in the vicinity of Bering Strait, Alaska. *Photo. by F. H. Nowell.*

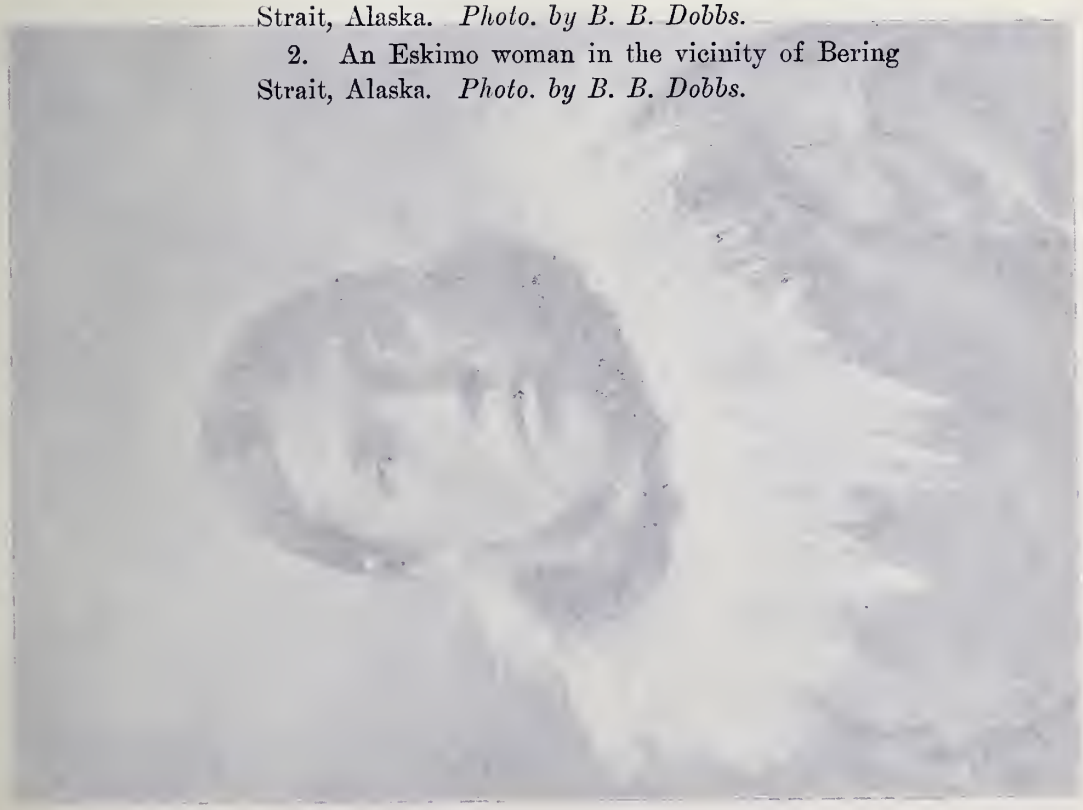


1 Eskimo Men, Vicinity of Bering Strait, Alaska. *Photos by F. H. Nowell, Nome.*

PLATE XVI.

1. An Eskimo woman, in the vicinity of Bering Strait, Alaska. *Photo. by B. B. Dobbs.*

2. An Eskimo woman in the vicinity of Bering Strait, Alaska. *Photo. by B. B. Dobbs.*



1

2

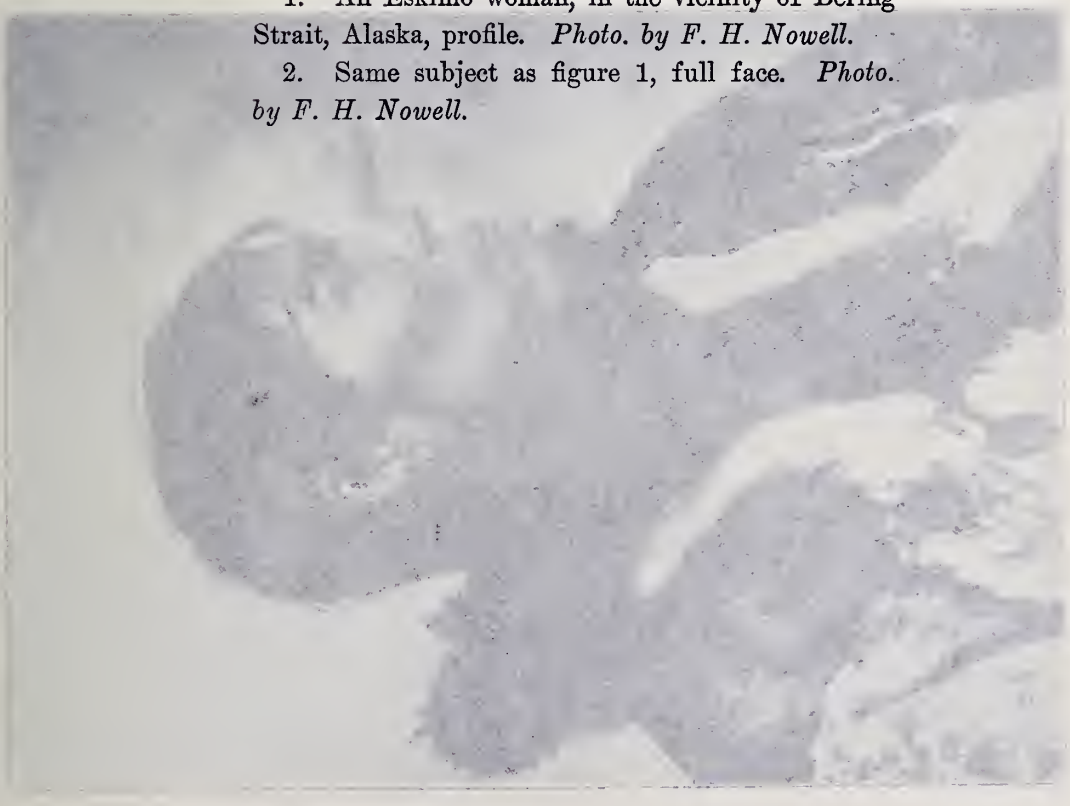
Photos by B. B. Dobbs, Nome.

Eskimo Women, Vicinity of Bering Strait, Alaska.

PLATE XVII.

1. An Eskimo woman, in the vicinity of Bering Strait, Alaska, profile. *Photo. by F. H. Nowell.*

2. Same subject as figure 1, full face. *Photo. by F. H. Nowell.*



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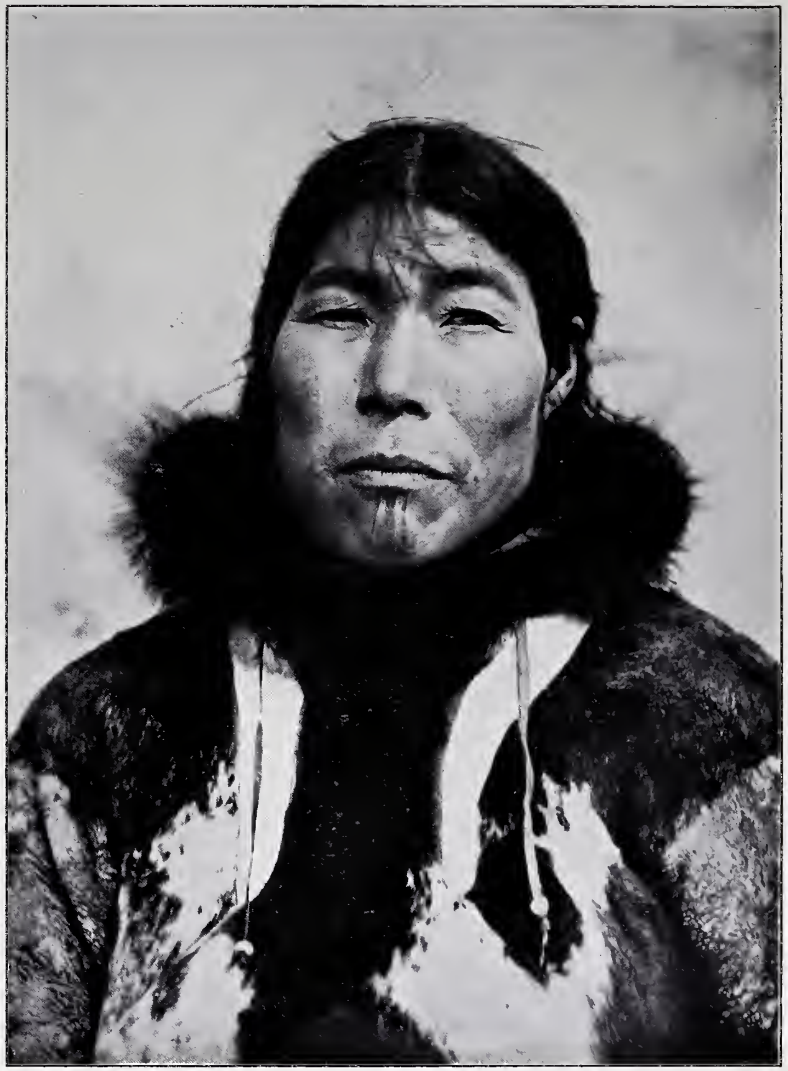


2

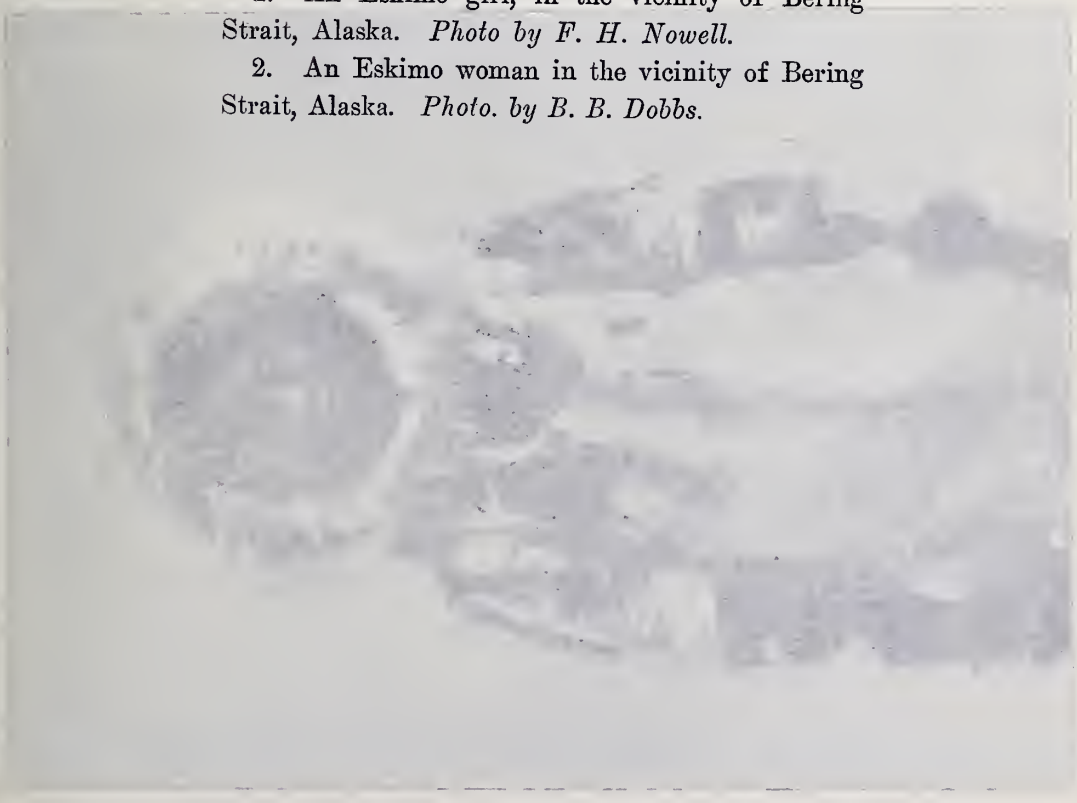
Photos by F. H. Nowell, Nome.

An Eskimo Woman, Vicinity of Bering Strait, Alaska.

PLATE XVIII.

1. An Eskimo girl, in the vicinity of Bering Strait, Alaska. *Photo by F. H. Nowell.*

2. An Eskimo woman in the vicinity of Bering Strait, Alaska. *Photo. by B. B. Dobbs.*



1 *Photo by F. H. Nowell, Nome.*

2 *Photo by B. B. Dobbs, Nome.*

ESKIMO WOMEN, VICINITY OF BERING STRAIT, ALASKA.

PLATE XIX.

1. An Eskimo man, at the mouth of the Yukon River.

2. An Eskimo girl, aged six years, daughter of the man shown in figure 1.

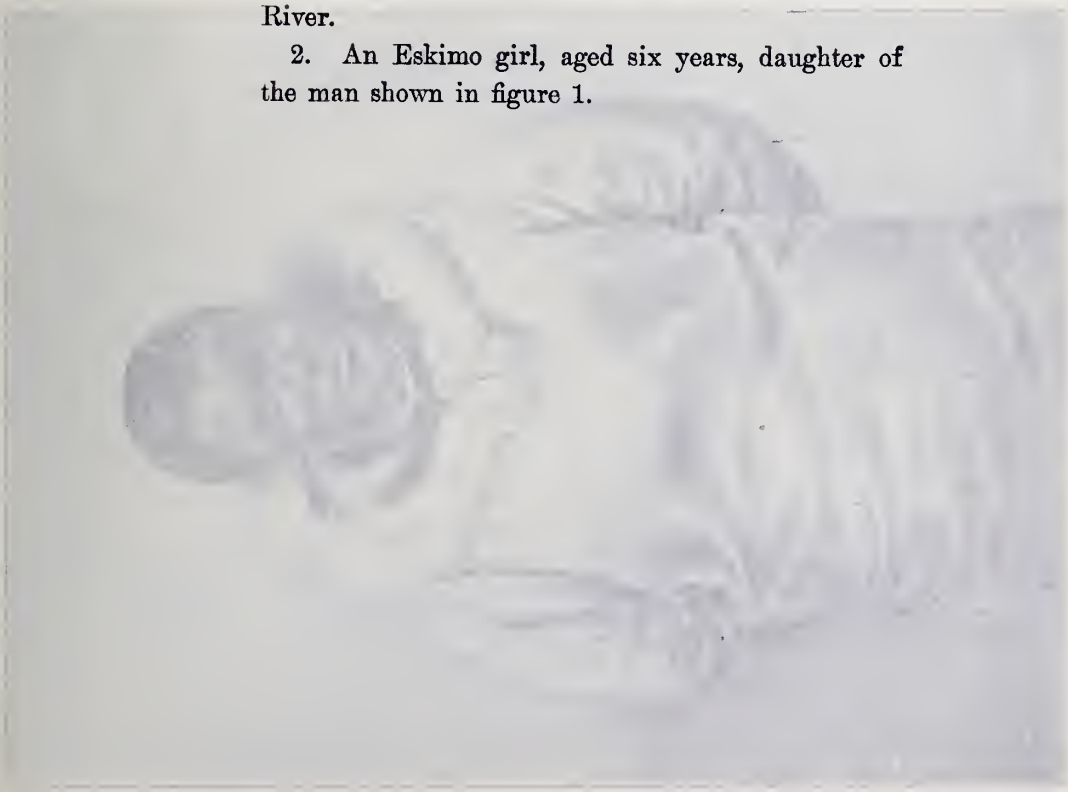


PLATE XIX.

1. An Eskimo man, at the mouth of the Yukon River.

2. An Eskimo girl, aged six years, daughter of the man shown in figure 1.

1 2

An Eskimo Man, Mouth of the Yukon River, and His Daughter, Aged Six.

PLATE XX.

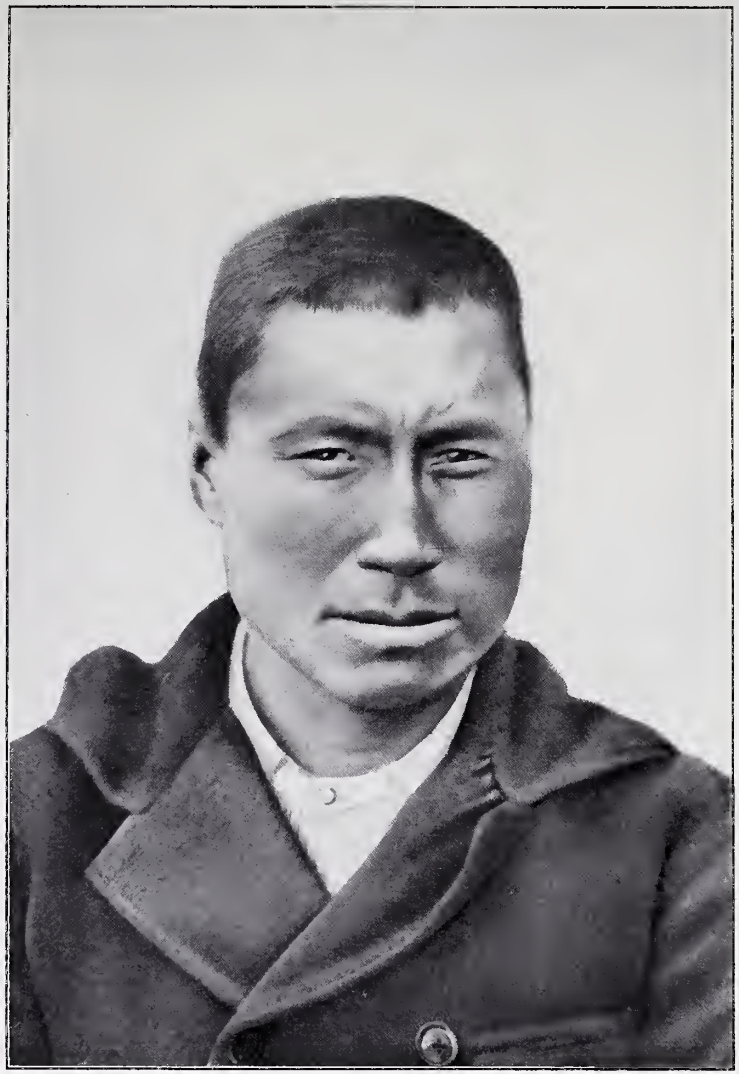
Two Eskimo women with their children on King Island, Alaska. Both the arms of one woman and the left arm of the other are tattooed.

Two Eskimo Women of King Island, Alaska.

PLATE XXI.

1. An Eskimoized Athapascan, at Anvik, on the lower Yukon. This man was educated at the Episcopal mission, at Anvik.

2. Same subject as figure 1, profile.



1

2

An Eskimoized Athapascan, Anvik, Lower Yukon River.

Educated at the Anvik Episcopal Mission.

PLATE XXII.

1. Pottery dish from the lower Koskokwim River, Alaska. Diam., 3½ in. *Reproduced by courtesy of the Peabody Museum of Harvard.*

2. Pottery dish from the lower Koskokwim River, Alaska. Diam. 4 in. Pictograph of the Right Whale. *Reproduced by courtesy of the Peabody Museum of Harvard.*

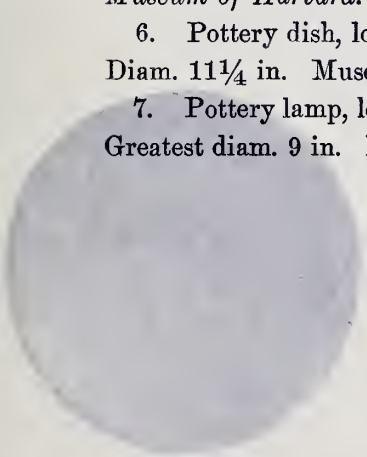
3. Pottery dish from the lower Koskokwim River, Alaska. Diam. 4¼ in. Museum No., N. A. 730.

4. Pottery dish from the lower Koskokwim River. Diam. 6½ inches. Museum No., N. A. 729.

5. Pottery dish from the lower Koskokwim River, Alaska. Diam. 9 in. Pictograph of the Right Whale. *Reproduced by courtesy of the Peabody Museum of Harvard.*

6. Pottery dish, lower Koskokwim River, Alaska. Diam. 11¼ in. Museum No., N. A. 717.

7. Pottery lamp, lower Koskokwim River, Alaska. Greatest diam. 9 in. Museum No., N. A. 743.



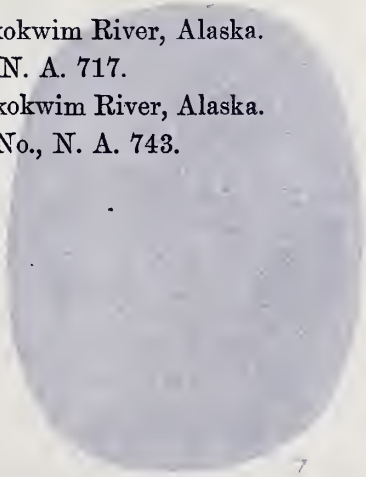


PLATE XXII.

1. Pottery dish from the lower Koskokwim River, Alaska. Diam., 3¼ in. Reproduced by courtesy of the Peabody Museum of Harvard.

2. Pottery dish from the lower Koskokwim River, Alaska. Diam. 4 in. Photograph of the Right Whale. Reproduced by courtesy of the Peabody Museum of Harvard.

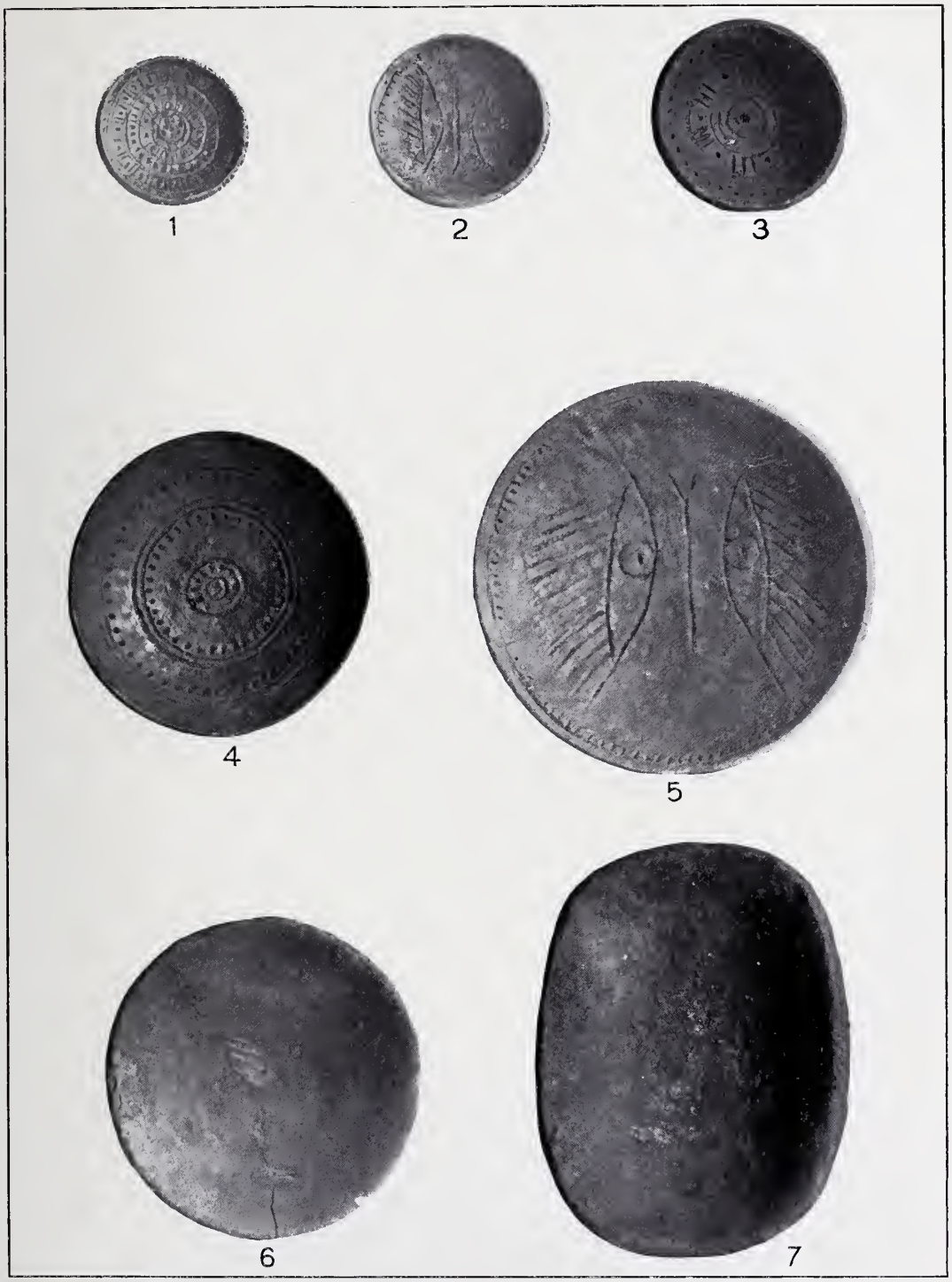
3. Pottery dish from the lower Koskokwim River, Alaska. Diam. 4¼ in. Museum No., N. A. 750.

4. Pottery dish from the lower Koskokwim River. Diam. 6¼ inches. Museum No., N. A. 752.

5. Pottery dish from the lower Koskokwim River, Alaska. Diam. 9 in. Photograph of the Right Whale. Reproduced by courtesy of the Peabody Museum of Harvard.

6. Pottery dish, lower Koskokwim River, Alaska. Diam. 11¼ in. Museum No., N. A. 717.

7. Pottery lamp, lower Koskokwim River, Alaska. Greatest diam. 9 in. Museum No., N. A. 743.



Eskimo Pottery, Alaska.

PLATE XXIII.

1. Pottery jar, from the lower Koskokwim River, Alaska. Height, 4 in. *Reproduced by courtesy of the Peabody Museum of Harvard.*

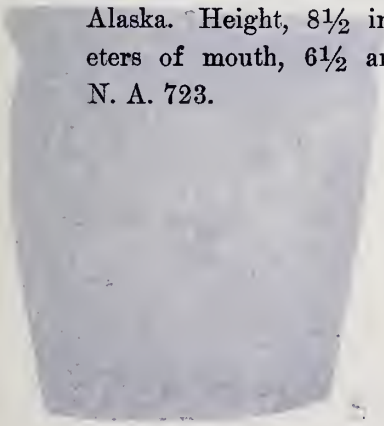
2. Pottery jar from the lower Koskokwim River, Alaska. Height, 2¼ in. Museum No., N. A. 728.

3. Pottery jar from the lower Koskokwim River, Alaska. Height, 6¾ in. Museum No., N. A. 725.

4. Pottery jar from the lower Koskokwim River, Alaska. Height, 4 in. Museum No., N. A. 726.

5. Pottery jar from the lower Koskokwim River, Alaska. Height, 6¾ in. *Reproduced by courtesy of the Peabody Museum of Harvard.*

6. Pottery jar from Unalakleet, on Norton Sound, Alaska. Height, 8½ in., elliptical mouth. Diameters of mouth, 6½ and 8¼ in. Museum No., N. A. 723.



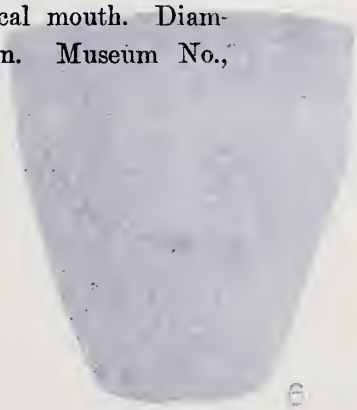


PLATE XXIII.

1. Pottery jar, from the lower Koskokwim River, Alaska. Height, 4 in. Reproduced by courtesy of the Peabody Museum of Harvard.

2. Pottery jar from the lower Koskokwim River, Alaska. Height, 3¼ in. Museum No., N. A. 729.

3. Pottery jar from the lower Koskokwim River, Alaska. Height, 6¾ in. Museum No., N. A. 725.

4. Pottery jar from the lower Koskokwim River, Alaska. Height, 4 in. Museum No., N. A. 726.

5. Pottery jar from the lower Koskokwim River, Alaska. Height, 6¾ in. Reproduced by courtesy of the Peabody Museum of Harvard.

6. Pottery jar from Unalakleet, on Norton Sound, Alaska. Height, 8½ in., elliptical mouth. Diameters of mouth, 6½ and 8¼ in. Museum No., N. A. 723.

Eskimo Pottery, Alaska.

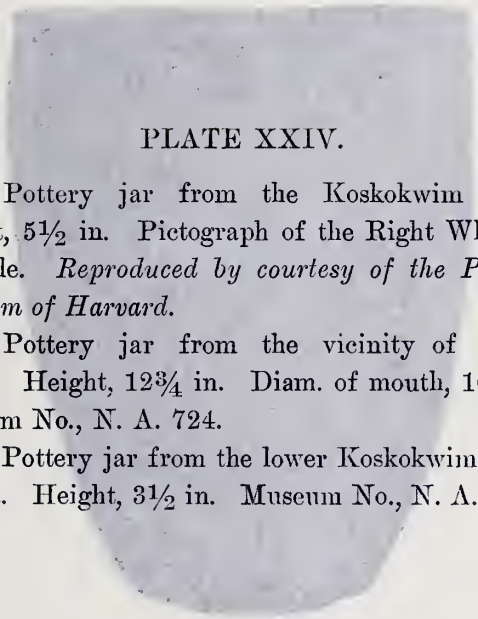


PLATE XXIV.

1. Pottery jar from the Koskokwim River. Height, 5½ in. Pictograph of the Right Whale on the side. *Reproduced by courtesy of the Peabody Museum of Harvard.*

2. Pottery jar from the vicinity of Bering Strait. Height, 12¾ in. Diam. of mouth, 10½ in. Museum No., N. A. 724.

3. Pottery jar from the lower Koskokwim River, Alaska. Height, 3½ in. Museum No., N. A. 727.

2

3

PLATE XXIV.

1. Pottery jar from the Koskokwim River. Height, 8½ in. Photograph of the Right Wind-ale on the side. Reproduced by courtesy of the Peabody Museum of Harvard.

2. Pottery jar from the vicinity of Bering Strait. Height, 12¾ in. Diam. of mouth, 10½ in. Museum No. N. A. 724.

3. Pottery jar from the lower Koskokwim River, Alaska. Height, 9½ in. Museum No. N. A. 727.

1

2

3

Eskimo Pottery, Alaska.

PLATE XXV.

1. Pottery lamp, Northeastern Siberia. 6¾ in. x 8 in. Museum No., N. A. 734.

2. Pottery lamp from Northeastern Siberia. 8¾ in. x 9 in. Museum No., N. A. 735.

3. Pottery lamp from Northeastern Siberia. 9 in. x 10 in. Museum No., N. A. 733.

4. Pottery lamp from Saint Lawrence Island. 9 in. x 10¾ in. Museum No., N. A. 731.

5. Pottery lamp from Northeastern Siberia. 9 in. x 11½ in. Museum No., N. A. 732.

6. Pottery lamp. Norton Sound, Alaska. 12½ in. x 14½ in. Museum No., N. A. 736.

7. Pottery lamp, Northeastern Siberia. 9 in. x 10¼ in. Museum No., N. A. 733.

8. Pottery lamp, Northeastern Siberia. 10¾ in. x 13 in. Museum No., N. A. 731.

9. Pottery lamp, Cape Prince of Wales, Alaska. 10½ in. x 15¼ in. Museum No., N. A. 719.

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9. Pottery lamp, Cape Prince of Wales, Alaska. 10½ in. x 12½ in. Museum No., N. A. 719.

Eskimo Pottery Lamps, Alaska.

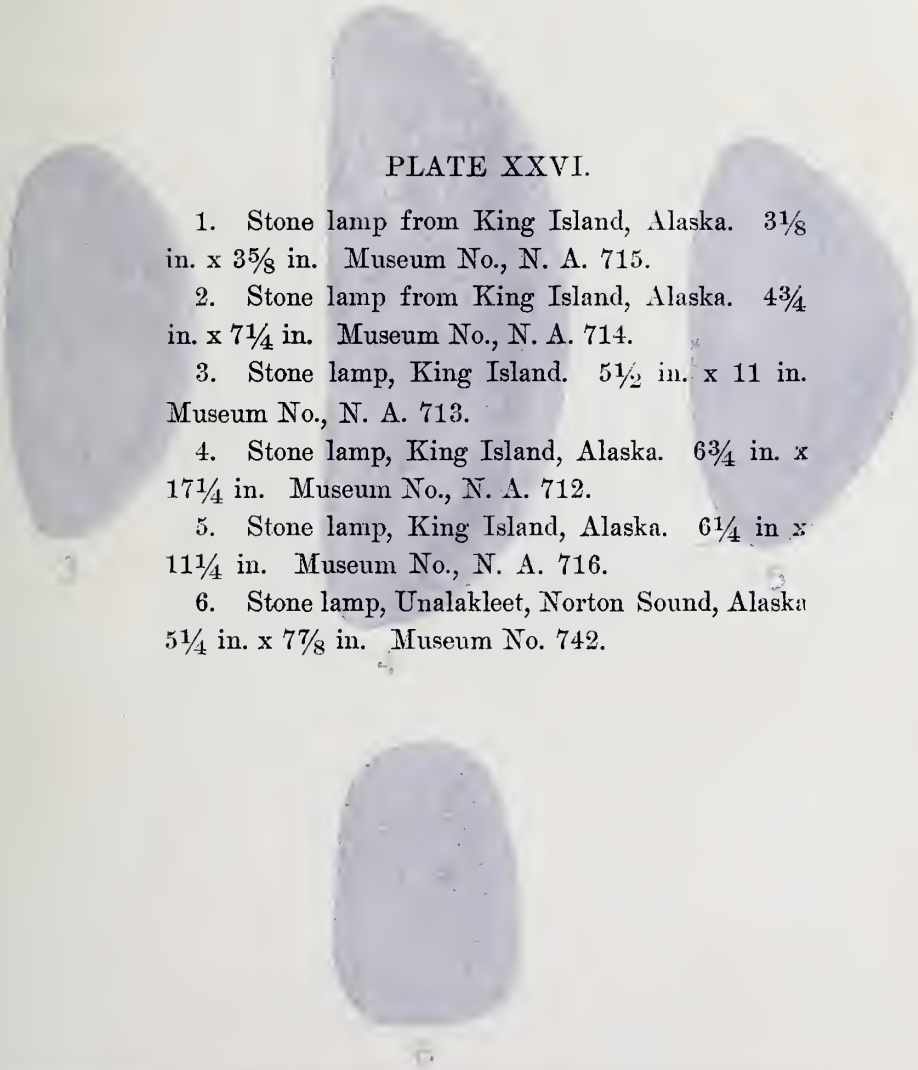


PLATE XXVI.

1. Stone lamp from King Island, Alaska. 3⅛ in. x 3⅝ in. Museum No., N. A. 715.

2. Stone lamp from King Island, Alaska. 4¾ in. x 7¼ in. Museum No., N. A. 714.

3. Stone lamp, King Island. 5½ in. x 11 in. Museum No., N. A. 713.

4. Stone lamp, King Island, Alaska. 6¾ in. x 17¼ in. Museum No., N. A. 712.

5. Stone lamp, King Island, Alaska. 6¼ in x 11¼ in. Museum No., N. A. 716.

6. Stone lamp, Unalakleet, Norton Sound, Alaska 5¼ in. x 7⅞ in. Museum No. 742.

PLATE XXVI.

1. Stone lamp from King Island, Alaska. [illegible] in. x [illegible] in. Museum No., N. A. 715.

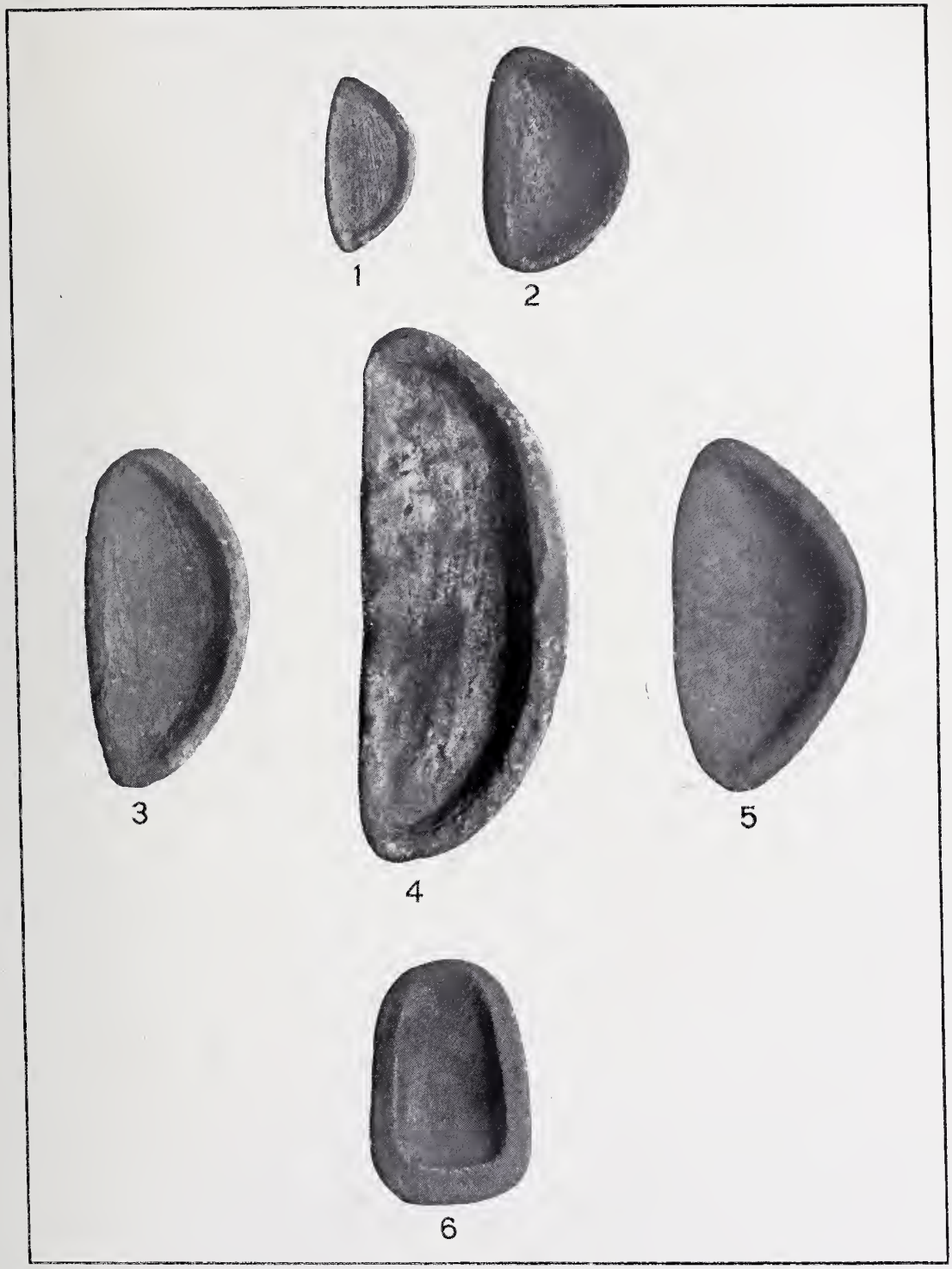
2. Stone lamp from King Island, Alaska. [illegible] in. x 7¼ in. Museum No., N. A. 714.

3. Stone lamp, King Island. 5½ in. x 11 in. Museum No., N. A. 713.

4. Stone lamp, King Island, Alaska. 6¾ in. x 17½ in. Museum No., N. A. 712.

5. Stone lamp, King Island, Alaska. 6½ in x 11½ in. Museum No., N. A. 716.

6. Stone lamp, Unalakleet, Norton Sound, Alaska. 5½ in. x 7½ in. Museum No. 742.



Eskimo Stone Lamps, Alaska.

AN ENGRAVED BONE FROM OHIO.

Examples of aboriginal engraving on bone from the Ohio valley region are rare and at the same time of very great interest. Those which have been recovered and preserved are among the finest examples of the engraver's art as it was practiced by the ancient inhabitants of that region; or, indeed, by any of the aboriginal peoples of the continent. Interest, however, attaches not so much to the artistic capacity which they illustrate as to the elaborate and highly developed symbolism which they exemplify equally well.

The illustrations shown on Plate XXVII are photographed from an old engraving preserved in an uncatalogued collection of miscellaneous prints in the University Museum.

The plate which has apparently been cut from an octavo volume, measures 5 by 8½ inches. It is without number and has no marks to identify the work to which it belonged. Across the upper margin is printed in small italics the following legend: *Four Views of a Sculptur'd Bone (supposed to be the Femur of an Elk, found in an ancient Indian Grave, or Barrow, in the Town of Cincinnatti, on the River Ohio,* 1801.

On Plate XXVIII is reproduced a development of the design engraved on the surface of the bone, drawn from the four views shown on Plate XXVII and exhibiting the dorsal aspect. On Plate XXIX is shown another development of the same design drawn from the same four views and showing the ventral aspect. The specimen as represented in the old engraving shows every mark of authenticity and the four copies have the character of accurate and conscientious work.

It seems probable that some portion of the design is lost at the broken end of the bone. Of what remains, the principal feature is the head of an animal drawn in a conventional manner characteristic of the art of the people who built the earthworks of the Ohio valley. Notwithstanding certain characteristic marks, the identity of the animal thus represented seems at first sight doubtful, owing to our ignorance of the symbolic expedients by which in all probability the exact species is indicated. I believe, however, that the marks are sufficiently plain to determine the species with reasonable certainty. The only feature that presents really natural characteristics is the dentition, which is that of one of the carnivora, and, being drawn in a manner which contrasts with the conventional character of the other features, may have

been intended to indicate the artist's intention with regard to species. Of the North American carnivora we may eliminate all but the wolf, the lynx and the puma. The fox is too inconspicuous an animal to be selected as the subject for a drawing of this kind and the symbolism of the bear is known to differ from that which appears in this example. Besides, the dentition does not correspond to that of either the fox or the bear.

Two incisors only are shown in each side, which is, of course, a deliberate omission, since all the carnivora have three incisors in each side, as the artist was perfectly well aware. The canines are large and recurved. Only one premolar appears and one molar. None of the animals which we have to consider have only one premolar in the upper jaw, but in the canidae and the felidae the carnassial is the only one of the premolars at all conspicuous, and in the felidae especially this tooth is greatly developed. The suppression of the other promolars is as would be expected in a drawing of this kind, in which the artist seizes upon the striking and characteristic features, suppressing the less prominent. The wolf has two molars while the members of the cat family have only one. The recurving of the canines is also a characteristic of the cats as distinguished from the dogs, and this trait is most strongly marked in the puma. The teeth of the animal shown in the drawing are in fact those of one of the felidae, and the animal must therefore be either the lynx or the puma, and the dentition resembles that of the puma most closely. The most striking feature of the lynx, the one most likely to be seized upon by an aboriginal artist for symbolic treatment, consists in the tufted ears, of which there is ~~an~~ indication in the engraving.

The long projecting snout in front of the nose pad with its eight pointed rays is a purely conventional device of unfamiliar look. In front of this an oval figure, apparently attached to it, contains the symbolic eye. Beside this is another symbolic figure with five padded digits.

G. B. Gordon.

LIST OF PLATES

ACCOMPANYING ARTICLE ON AN ENGRAVED BONE FROM OHIO.

PLATE XXVII. Four views of an engraved bone found in an Indian grave at Cincinnati, Ohio, 1801. From an old print.

PLATE XXVIII. Development of design on an engraved bone. Dorsal aspect.

PLATE XXIX. Development of design on an engraved bone. Ventral aspect.

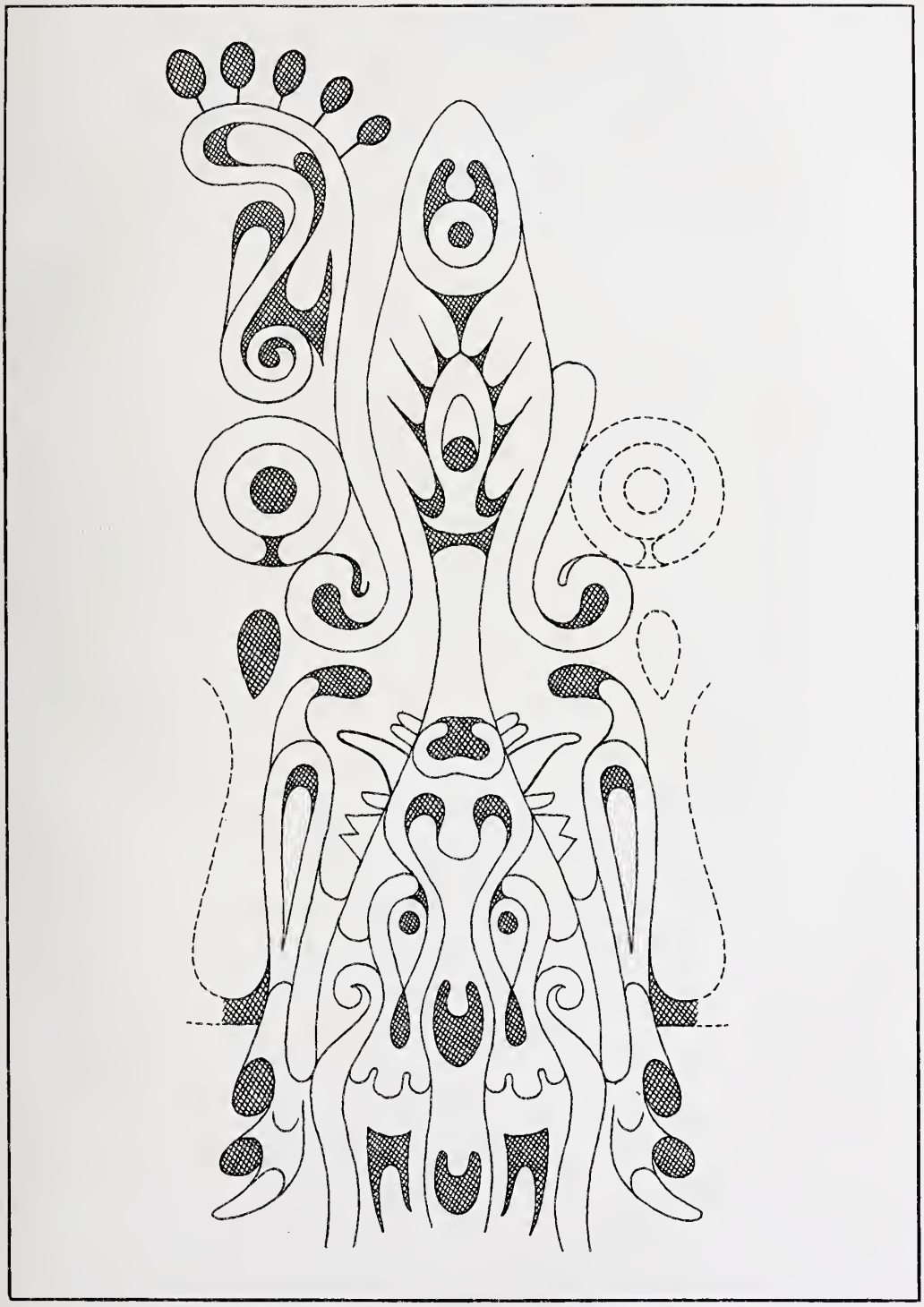
PLATE XXVII.

Four views of an engraved bone found in an Indian grave at Cincinnati, Ohio, 1801. From an old print.

Four Views of an Engraved Bone.
From an old print.

PLATE XXVIII.

Development of design on an engraved bone. Dorsal aspect.



Design Engraved on Bone. Dorsal Aspect.

PLATE XXIX.

Development of design on an engraved bone. Ventral aspect.

Design Engraved on Bone. Ventral Aspect.

UNIVERSITY OF PENNSYLVANIA

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REPORT OF EXCAVATIONS AT VASILIKI, CRETE, IN 1906.

The Season's Work.

Through the kindness of Mrs. C. H. Hawes (Miss H. A. Boyd) the permit which was granted to her in the name of the American Exploration Society and which gave the right to conduct excavations on the Isthmus of Hierapetra was transferred to me in the autumn of 1905, and I was thus enabled to continue excavations the following spring at Vasiliki, Episcopi, and on the Island of Pseira. It has seemed best to confine this report to the excavations at Vasiliki, but brief mention may be made of the discovery of Late Minoan tombs at Episcopi, from which some sixty vases of the types usually found in the *larnax* burials of this period were recovered; and also of the evidence obtained on the Island of Pseira, which goes to show that the remains there date mainly from the Late Minoan I and II periods. However, until further work has been carried on, it is impossible to say anything definite either as to the extent or the age of the Pseira site.

The season of work on the Kephala at Vasiliki began April 30 with about fifty men and ended three weeks later and, as well as such a thing can be said of any site, the excavations at Vasiliki may be considered finished. In view of the short time employed, of the limited extent of the site, and of the great havoc wrought by long-continued cultivation, the finds were remarkably numerous. They have confirmed in the main the conclusions formed in 1904 and published in the *Transactions*, Vol. I, Part III, p. 207. Moreover, the discovery of some Middle Minoan houses on the east slope, the existence of which was unsuspected in 1904, has added somewhat to our knowledge of this period in eastern Crete.

There seems little doubt that in the Middle Minoan period the whole east slope of the Kephala was covered with habitations separated by roads, and similar to the Gournia settlement as we see it today. At Vasiliki, however, cultivation and denudation have completed the original work of destruction and it is only on certain terraces where a sufficient depth of earth exists that

we find house-walls preserved. The majority of fields on the east slope are covered with only a few inches of soil and the roughly hewn stones from the destroyed houses are seen built into the present field walls on all parts of the hill. Many of the best finds of the year were made within a few inches of the surface where a European plow would have long ago uncovered them, and, inasmuch as I was shown several places where many vases had been turned up and destroyed, it was singularly fortunate that in such shallow soil two

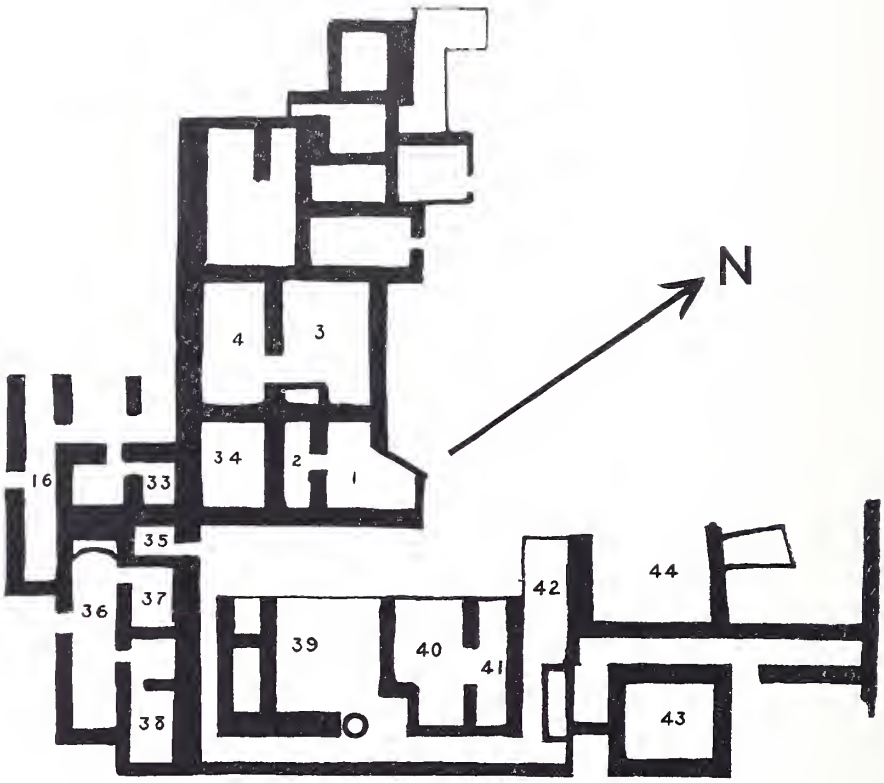


Fig. 1.

Middle Minoan houses should have remained undisturbed, with no signs of either earlier or later walls among their ruins.

The successive settlements on the Kephala are remarkably distinct; in almost every period there is at least one representative house or deposit standing quite apart from earlier or later buildings. For Period III[1] we have the

[1] See below, p. 114.

house on the hill-top (Fig. 1.)[2]; for Period IV the rock-cut well, and for the Middle Minoan period the houses just mentioned. The first house cleared on the Kephala in 1903 represents the Late Minoan I period, while of much later date are a number of Roman houses built under the edge of the cliff on the west side of the hill. Presumably a Late Minoan III settlement is to be looked for at or near Hagios Theodoros, a fertile hillside high above the Kephala itself where we opened this year a large beehive tomb of that period.

With regard to the architecture of the first three periods there is little to be said in addition to what has already been published. On the northwest side of the house of Period III a large paved court was uncovered, but its western and southern boundaries could not be determined because of the shallow soil and the presence of numerous huts of the Roman occupation. All the rooms uncovered to the north and east of this court seem to belong to the first two periods of building on the Kephala and were not included in the later reconstruction of Period III. Except for a large hand-made cup, a couple of stone celts, and many sherds, these rooms were singularly empty. The exact extent of the buildings of Period III on the Kephala is difficult to determine. It is evident, however, that the big house stood in the center with a few small houses clustered about it and yet the settlement could hardly have been even a village since there are no remains of this period on the lower slopes of the hill and since the paved streets date apparently from the Middle Minoan epoch. The long narrow building (Fig. 1, Rooms 36 to 44) was without doubt a part of the big house. A heavy terrace wall, shallow soil, and a number of carob trees have destroyed the actual points of contact, but a cellar door opening toward it from Room 34 in the main house shows that it was a part of the same structure.

In Period IV the house walls are very poor and are built of small stones, but in the Middle Minoan houses they are indistinguishable from those of Gournia and other sites of the Middle and Late Minoan I periods. One large house (Fig. 8) of the Middle Minoan I occupation was remarkably well built and had several interior walls made of the same large bricks which were common in the big house of Period III. Judging from the solidity of structure as well as from the objects found within, it seems to have been a mansion superior to the neighboring houses.

One change in the previous classification of the first four periods has been rendered necessary by the results of the season's work. Period I, characterized by the prevalence of incised sub-neolithic ware, should be combined with Period II, characterized by the prevalence of dark on light geometric ware. It seems plain from rooms in the northwest corner of the big house and in other places on the east slope of the hill, that these two periods were contemporaneous and that the incised fabrics cannot be said to have preceded the

[2] For plan of earlier excavations in this building, see *Transactions*, Vol. I, p. 208.

dark on light geometric ware, but rather to have existed side by side with it. In tabular form the periods at Vasiliki are then as follows:

Periods I and II. Incised and mottled ware is found together with the dark on light geometric. *Period III.* The mottled ware alone continues in use to the exclusion of all other styles. The big house is built and abandoned during this period.	Knossos Early Minoan II.
Period IV. Light on dark geometric ware gradually supersedes the mottled style which is dying out.	Knossos Early Minoan III.
Middle Minoan Houses. The deposit in House B is characterized by cups of Class A type from Palaikastro ossuaries (*B. S. A.* IX, p. 302, Nos. 1 to 6), and by a series similar in shape but decorated with geometric patterns in dark paint on a light ground which closely resemble, in design, the light on dark ware of Period IV. The deposit in House A is later than that of House B but is shown to belong to the Middle Minoan I period, both by the extensive use of red paint and by the absence of cups of the Palaikastro type Class B (*B. S. A.* Vol. IX, p. 302, Nos. 7–13). The occurrence of naturalistic designs would tend to place the deposit at the end of the period.	Knossos Middle Minoan I.

This year's work has added a few new shapes to the mottled ware of Period III, but the bulk of the finds merely duplicates those already known.

In regard to the pottery characteristic of Period IV—the light on dark geometric ware, published by Miss Hall (*Transactions*, Vol. I, p. 191)—we have learned much. A large number of examples of this ware (Fig. 4) found in a deep rock-cut well on the east slope of the Kephala constitute the most important result of the year's work. It is the first time that entire specimens have been found in any number, although a few good cups were discovered by the British School at Palaikastro (*B. S. A.* Vol. XI, p. 27 i) last year and by Mrs. Hawes at Hagia Photia in 1904. Our previous knowledge was based chiefly on the large deposit of sherds from Gournia, of which Miss Hall undertook the classification, and, although the new vases from Vasiliki are in the main similar, they show a more advanced technique and a greater variety of shapes.

The tombs at Vasiliki proved to be as elusive as those belonging to the majority of early sites in Crete, and although we spent many days digging trenches in every promising spot, our efforts were in vain. It might naturally have been expected that tombs of Periods I, II, III and IV would be found

under the shelter of the overhanging cliffs on the west slope, but here we discovered only poor Roman hovels, built against the rock along its southwest face, while on the northwest, aside from one house of Period III, there were no signs of human occupation. In 1904 a bone-enclosure was opened on a slope to the south of the Kephala but, except for four undecorated *larnakes*, a carnelian bead, and a small black Middle Minoan cup, there were no evidences as to its date. It was here we had hoped to find other bone-enclosures or tombs, but again the only walls cleared belonged to the Roman period and were connected with a small conduit which supplied the Roman settlement on the Kephala with water from the hills near Episcopi.

Such is the general outline of the season's work and its results. We will now examine in chronological order the pottery and other small objects found.

Periods I and II.

These periods were but scantily represented among the season's finds, and we cannot add anything of importance to what was said in 1904. One vase and a few incised sherds were found in a rock crevice near the well of Period IV to which I have already referred. Under the floor of the big house in Room 34 were found a number of fragments which, when joined together, indicated a large vase of dark on light geometric ware. These fragments represent the highest development of the style of Period II, and in finish, paint, and clay are in no way inferior to the ware of any of the succeeding periods.

The absence of any true neolithic ware and the fine quality of the vases in these early periods at Vasiliki confirm the statement made in the *Transactions* (Vol. I, Part III, p. 219) that the extreme antiquity of the buildings on the Kephala is still open to doubt. In fact, this year's work has strengthened the original opinion that the earliest settlement does not date from much before 2500 B. C. and that in eastern Crete the evidence always tends to shorten the life of the various epochs.

The fact that the mottled ware is in use in the first four periods at Vasiliki means either that it had an extraordinarily long existence, or, what seems more probable, that these periods were of short duration, in which case they could hardly cover the long number of years assigned to them in the Knossos sequence.[2]

---

[2] In Southern India from Tutticorin to Madras the mottled ware of Period III is in common use today among the native population. These Indian vases are identical in all but shape with those from Vasiliki although the paint and polish are a trifle inferior. The description of the probable method of firing used at Vasiliki to attain this mottled surface (*Transactions*, Vol. I, Part III, p. 216) corresponds to that employed in India at the present time to bring about the same effect.

Period III.

About thirty-six specimens of this ware were added this year to those previously discovered. Although there is nothing strikingly new about these vases, one or two shapes deserve special mention. As before, the best specimen, a *schnabelkanne*, came from the big house, but the majority were found in a small passage (Fig. 1, Room 42) just below, in the large building on the east slope. Of the new shapes one is especially interesting, as it again links Vasiliki with the Zakro burial found by Mr. Hogarth (*B. S. A.* Vol. VII, p. 143). It is a large plate of plain red burnished ware with a small rim spout and lip handle. The specimen from Zakro is identical except that the Zakro plate is larger and deeper. These plates, to judge from fragments, seem to have been one of the commonest shapes in the houses of Period III, but this was the only specimen that was found entire. Another new type is a small boat-shaped dish (Fig. 5 a) which we shall find again among the vases of Period IV. The connection between these two periods in respect to shapes is very close and points to a quick transition from one style to the other. Already upon the vases of Period III, the light on dark technique begins to assert its influence. One unusual vase (Fig. 3 b) seems to represent some animal form and closely resembles a curious set of vases found by Mr. Xanthoudides at Koumasa in the Messara. The other vases from this group repeat the already familiar shapes of the spouted "flower-pot," the bridge-spouted bowl, the "egg-cup," and the side-spouted jar so common in finds of two years ago.

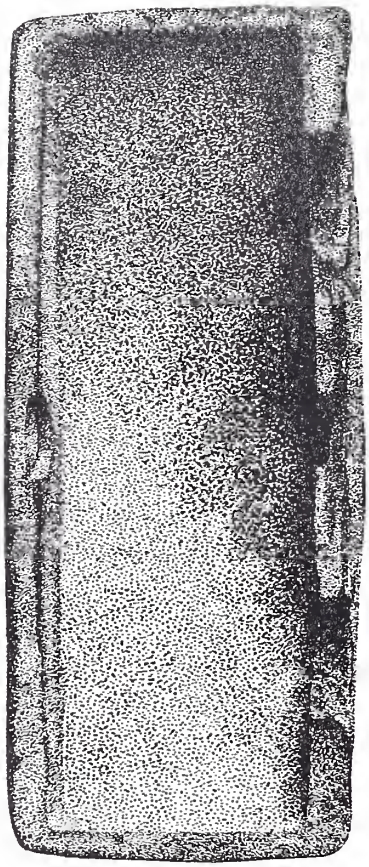


Fig. 2.

In a house built against the cliff on the northwest side of the hill among objects belonging to Period III was found the bronze mould for an axe-head, shown in Fig. 2. Similar moulds in steatite have been found at Gournia and elsewhere, but never one in metal nor one of so elaborate a character. Only one half remains, but it is apparent that the other half must have exactly duplicated this one. To cast an axe-head, a peg, probably of wood, was first

placed across the middle of the mould, the ends fitting into the notches made for it on either side. The two halves must then have been tied together and the mould set up on edge for the molten metal to be poured in through one of the two circular holes in the side. As the metal ran in one hole the air escaped through the other until the hollow was entirely filled. As soon as the metal began to harden the mould could be placed with its curved side down, in which position four small knob-like legs would hold it steady. When the mould was opened and the charred peg removed, the axe was ready for whatever purpose such axes served in prehistoric Crete.[3]

Of the stone vases of this period we have learned nothing more and, aside from the bronze mould just described, the only object in metal was a knife blade of an intermediate type between the short triangular daggers of Koumasa and the long slender blades of the later periods.

The Vasiliki vases of Period III correspond in regard to shape to the vases found by Mr. Xanthoudides at Koumasa and by the Italian Expedition in the Tholos of Hagia Triada, but when it comes to technique, the parallelism ceases. The red and black mottled surface appears but rarely at these other sites and seems to have been confined chiefly to the Kephala or its immediate neighborhood. It is not improbable that this style of decoration was peculiar to Vasiliki and that pottery of this type found elsewhere either came originally from this site or was made in imitation of the Vasiliki ware. The shapes of the vases from the early burial at Palaikastro described in *B. S. A.* X, p. 197 are the same as those from Vasiliki, but the finish is different and lacks the hardness and brilliancy of the true mottled ware. The few sherds and the one vase of this fabric found at Gournia are apparently foreign to that site, as has been pointed out by Mrs. Hawes (*Transactions*, Vol. I, Part III, p. 186). It seems strange, however, that the people of a small town should have had the monopoly of so striking a style of decoration, unless we suppose them to have been a colony of foreigners who brought their methods with them from a former home. Where that home might be placed is a difficult question on which it is almost useless to speculate. In the Constantinople Museum there are several vases found near Angora which are identical with the Vasiliki mottled ware; and in general the similarities between Vasiliki and early sites in Asia Minor are too striking to be overlooked. Whether these similarities can be taken as proof that the settlers of Vasiliki were of Asiatic origin it is too soon to say. The question can never be decided until systematic excavations have been commenced on some of the inland sites of Asia Minor, but of this, unfortunately, there is no immediate prospect.

[3] It has been suggested by Professors Ridgeway, Bosanquet, and others that these axes are an early type of money and in view of the size of the socket, which is too small as a rule to admit a handle sufficiently strong to bear the weight of a metal head, and of the absence of any signs of indentation or flattening on the cutting edge, this theory seems very probable.

Period IV.

In 1904, in some pits sunk to the southeast of the big house of Period III, we found many sherds of the light on dark geometric ware, published by Miss Hall in *Transactions*, Vol. I, Part III, p. 191, and recognized that this ware was an important factor in the history of the settlements on the Kephala. It was the hope of finding whole specimens of this pottery which led me to continue digging at Vasiliki in 1906, but if it had not been for the rock-cut well (Fig. 1, Room 39) to which I have before referred, I should have been disappointed, inasmuch as the settlement seems to have been only a small one with its houses overthrown and their contents much destroyed. The ground about the pits was carefully cleared, but it was impossible either to piece together any of the smaller fragments found or to distinguish one house from another. The earth at this point was four metres deep; the first two metres were filled with sherds of this ware together with pieces of the mottled ware characteristic of Period III, while in the two metres below, the mottled ware, except for an occasional sherd of dark on light geometric ware, held undisputed sway.

The area in which the sherds of Period IV were found was small, measuring about eight by ten metres. Where the hill falls away to the river, were found Middle Minoan houses which were built, as a rule, on either bed rock or undisturbed ground. The settlement is even less extensive than that of the preceding period and seems to have consisted of poorly built hovels huddled against the massive outer walls of the big house of Period III, already in ruins. Even the room containing the well is of an earlier period, and it is to the fact that this well was used as a dump heap that we owe our knowledge of Period IV.

On the east side of the hill lies a series of rooms (Fig. 1, Rooms 39–41) which open from a small alleyway, running north and south and at one time forming part of the big house of Period III situated just above it. In all the rooms, except those immediately about the well, vases of the mottled style were found in great numbers. It seems that the people of Period IV allowed the entire building to be destroyed, keeping the well open to supply their wants until it became filled with their own rubbish. Much of this must have been thrown in intentionally, since there are no evidences in the uniform deposit of gradual filling. The well lies in a square room (Fig. 1, Room 39) opening off from the narrow alley near its central point. It looks as if the alley had been built for the sole purpose of fetching water, since it ends in a blank wall a few paces beyond. In the crevices of the rock floor of the well-room were found many sherds of the incised grey ware of Period I, but the walls of the room seem to date from the period of the cutting of the well, which we must assume to have been Period III. The presence of a doorway leading from the basement of the big house into the series of rooms, one of which contains the well,

confirms this conclusion. Moreover, the quantity in which mottled ware is found in all parts of the building, leaves no doubt as to its proper place in the Vasiliki chronology.

The sherds from the well were taken out separately, metre by metre, but unnecessarily, since the pottery, except for a few unmixed sherds of Period III at the bottom, was alike throughout. These few mottled sherds help to fix the date of the well. A side-spouted jar of the mottled ware of Period III, on which a design in white had been painted, was found in the lowest metre of soil. Here we see again the transition from the mottled technique to that of Period IV where, although the decoration changes, the shape so typical of Period III lives on under the new order. This vase was found together with others of the fully developed style of Period IV. Moreover, scattered sherds of the mottled ware were found in almost every metre, but in much smaller numbers than was the case in the pits where the cruder light on dark ware, identical with the sherds from the Gournia dump, was found side by side with the mottled ware which at first retained its old popularity. Thus we must suppose that the contents of the well are of a slightly later date and represent Period IV at its highest stage of development when the old mottled fabrics have been practically abandoned for the now highly advanced light on dark geometric ware.

Aside from the evidence of the pottery, one would naturally associate so surprising a piece of industry as this well, which was cut through eight metres of solid rock, with the era of prosperity and with the large well-built house of Period III, rather than with the people of Period IV and their flimsy walls of small stones. Moreover, if the well were made by these last-named people, one would naturally suppose that the building in which it lies would contain some trace of their occupation, but not one piece of light on dark geometric ware was found in any of the rooms except inside the well and close to its mouth. Again, if it belonged to the people of Period IV, one would look to find it beside their own houses on the southeast part of the hill and not in the middle of a room in a ruined building of a preceding period.

At its mouth the well is a metre in diameter, but shortly below the surface it narrows to seventy-five centimetres to expand again to its original dimensions at about two metres from the level of the ground. This may have been contrived to protect the water from the rays of the sun, or perhaps merely due to carelessness, although the precision with which it gradually narrows and then expands, inclines one to the former explanation. For convenience in ascent and descent small notches were cut in opposite sides of the rock walls so that, with a rope to steady himself, a man could climb in and out with comparative ease. At the bottom, the well gradually narrows to the shape of a funnel. The pottery from the well is certainly a little later than the sherds from the Gournia waste-heap and those from the southeast pits at Vasiliki, but the

cups (Fig. 3 a c) with the barred triangular decoration are common to all three deposits, and many of the sherds from the well resemble in decoration those from the other two places.

All these objects were in a marvelous state of preservation. The white paint was hard and fresh and there was no coating of lime to be removed because the well was filled with a kind of slippery mud which could be washed off in fresh water and which left the decoration as clean as when first applied. This wet, sticky earth made the task of clearing the well doubly difficult. It took one workman two weeks to reach the bottom, for the dirt had to be raised a basketful at a time, and to the lack of space in which to work, other difficulties were added as the depth increased—such as want of light and of good air.

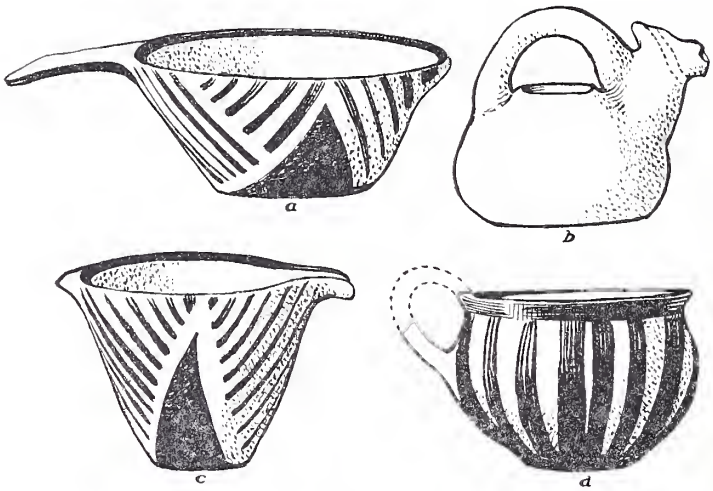


Fig. 3.

The vases are, as a rule, of fine-grained buff clay. The black body-paint generally covers the entire outside of the vessel but never the inside except for a band just around the rim. This rule does not apply to plates nor to low open bowls where the inside is decorated in preference to the outside. The body-paint, owing to imperfect firing, shades from black to brown or red; the decoration is laid on in chalky paint of a yellowish white color.[4]

[4] In the Rajput States of India the domestic pottery of the people is strikingly similar in decoration to that of Period IV at Vasiliki. The white geometrical design on a red ground is more commonly seen than the white on black, which, nevertheless, occurs. Many of the designs duplicate those found in the well at Vasiliki, and especially noticeable is the frequent use of the cross-hatched circles and lozenges so typical of the Gournia waste-heap. The parallelism ceases with the painted decoration, for the shapes only correspond with those of Period IV in a few cases.

The bases of the cups never show concentric striations made by the use of the string in separating the cup from the wet clay. They seem to have been severed by some dull instrument which has left the bottom rough and without the parallel striations found on Middle Minoan I cups.

The most frequent shape of vase is a small round-bodied cup (Fig. 4) with four small clay knobs set low on the body. These cups are always made of fine clay and are almost as thin as the "eggshell" ware of the Middle Minoan period. In design and finish, they would seem to place the whole deposit at a slightly later date than the Gournia waste-heap and the southeast pits to which they appear to be foreign. They were found in each metre from the top to the bottom of the well. Mixed with them were the more characteristic jars and cups of coarser clay and cruder design. These cups are particularly interesting as they often show a mixture of styles. The upper and lower

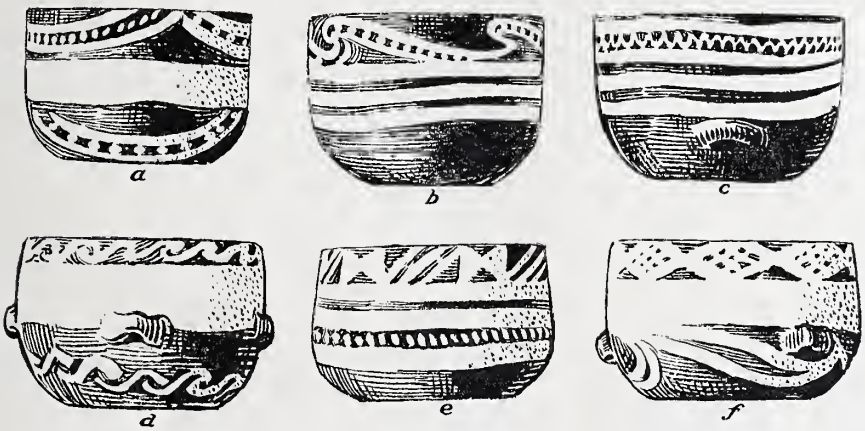


Fig. 4.

parts of the cup are painted black and bear a design in white, while the central band is left in highly burnished plain buff clay (Fig. 4 d). Such combinations of the dark on light and the light on dark techniques increase in popularity as time goes on until, in the Late Minoan I period, the former style prevails to the exclusion of the Middle and Early Minoan light on dark designs.

Aside from these cups, which must be regarded as a further development of the cups found at Gournia and Palaikastro (*B. S. A.* Vol. XI, p. 271, Fig. 5 c), the shapes show a close connection with those of Period III. The spouted "flower-pot" (*Transactions*, Vol. I, Part III, Pl. XXXIV, No. 2) has survived in the many decorated cups (Fig. 3 c). The boat-shaped dish (Fig. 5 a), mentioned among the new shapes of the preceding period, is represented by three specimens (two of which are shown in Fig. 5 b c), while the best preserved of all the large pieces of this period is one of the side-spouted jars

(Fig. 13) which are common in the mottled ware of Period III (*Transactions*, Vol. I, Part III, Pl. XXXIV, Nos. 6 and 7).

Another frequent shape is the hole-mouthed jar (Pl. XXX a), already made familiar by the fragments from the Gournia waste-heap (*Transactions*, Vol. I, Part III, p. 196, Fig. 3). It is derived from the jar figured in *Transactions*, Vol. I, Part III, Pl. XXXIV, No. 4. In another class of vessels we find the Vasiliki flower-pot on a much larger scale; on this type of vase the designs are always of the linear geometric style (Fig. 6).

Some of the following similarities in shape and design to the sherds found at Gournia show that the connection between the two in matter of date must have been very close in spite of the evidence of the cups just described. Decorated cups like those in *Transactions*, Vol. I, Part III, Pl. XXVI, Nos. 1 and 2, were found in great numbers. The handle, however, is not round, as at Gournia, but consists of a small clay knob on the rim (Fig. 3 c) or a broad strap handle horizontal to the body of the vase and attached only to the rim (Fig. 3 a). Cups of this type were found at Palaikastro (*B. S. A.* Vol. XI, p. 271, Fig. 5 b) where, I believe, both types, with and without the strap handle, were represented. At Vasiliki all these cups which have the clay knob instead of a handle have also an open rim spout; they are the direct descendants of the "flower-pot" shape of Period III (*Transactions*, Vol. I, Part III, Pl. XXXIV, No. 2). The round handle was never found except in a few cups of the general type figured in the *Transactions*, Vol. I, Part III, Pl. XXVI, No. 3.

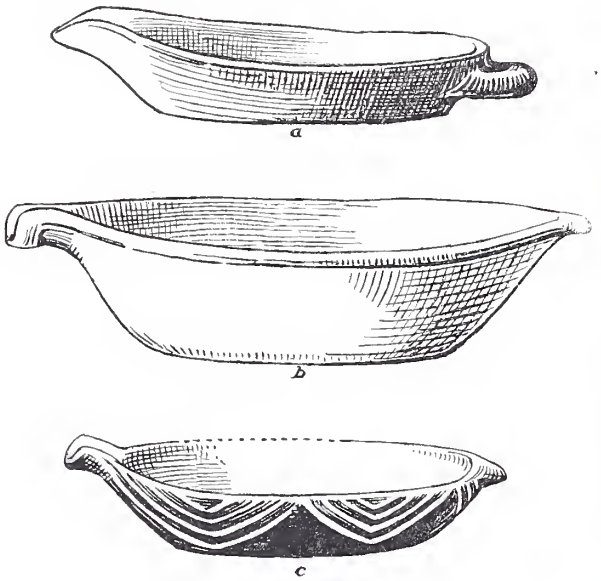


Fig. 5.

The cross-hatched lozenges and circles, so frequently noted by Miss Hall, are not represented among the vases from the well; but in a large *schnabelkanne* (Fig. 7), found in a Middle Minoan I house, we have one of the best examples of the Gournia style of cross-hatched circular design (*Transactions*, Vol. I, Part III, Pl. XXIX, Nos. 1-8). Whether we are to account for its

presence in a Middle Minoan house by regarding it as a family heirloom or by supposing that the owner found it in digging on the hillside and carried it home as a curiosity, cannot be decided with certainty. However that may be, it furnishes an excellent example of what must be considered the earlier style of Period IV, and comes chronologically before the "eggshell" cups and more conventional designs found in the rock-cut well. Taking the ware as a whole, it is more finished in shape, of finer clay and more regular design than its kindred ware from other sites. The Gournia and Palaikastro vases with their free, careless style of decoration may well be placed at the beginning of the Early Minoan III Period, while the vases from the well with the "eggshell" cups, the conventional designs, and generally finer finish belong more properly to its close.

Fig. 6

The attempts, noted at Gournia, to reproduce animal forms on vases, seem not to have been made at Vasiliki. No traces of them were found on objects from the well. The early exuberance of the period seems to have given way to set forms of decoration which point to a higher stage of development.

Fig. 7.

The obsidian knives are unusually fine; one specimen, measuring 9 cm. in length, is the largest I have yet seen in Crete. No stone celts were found, but the fragments of several stone vases show that the art of stone-cutting had already reached a high level in Period IV.

The connection between Periods III and IV is perhaps more clearly defined in the Vasiliki deposits than is the transition from Period IV to the Middle Minoan epoch. In the first two we find the shapes identical, and the light on dark style of Period IV begins while the mottled ware is still in extensive use. Between the vases of Period IV and those of the Middle Minoan I period the continuance of a light design on a dark ground, characteristic of both, is a strong connecting link, but we notice far fewer similarities in shape than one would naturally expect unless we suppose the change to have been abrupt.

The Middle Minoan I Houses.

HOUSE A.

On the east slope, some distance from the big house of Period III, two clearly defined houses of the Middle Minoan period were cleared, together with

the much confused remains of several others. In these latter houses there were two fairly distinct levels, the depth of three metres being evenly divided between the two. With regard to the difference in the contents of these two layers, it is difficult to say anything definite. The lower one was characterized by numbers of cups of the type shown in *B. S. A.* Vol. IX, p. 302, No. 4, while cups of the shape of *ibid.* No. 11 were rare in the lower level and common in the upper one. Again, the cups of the lower level were of thin clay and covered with paint of a good quality, red being often used in addition to the white. In the upper stratum not a sherd with red paint was discovered. The black body paint had been burned to a brown or red, but the decoration was always monochrome, which fact confirms what has already been noted at Knossos and

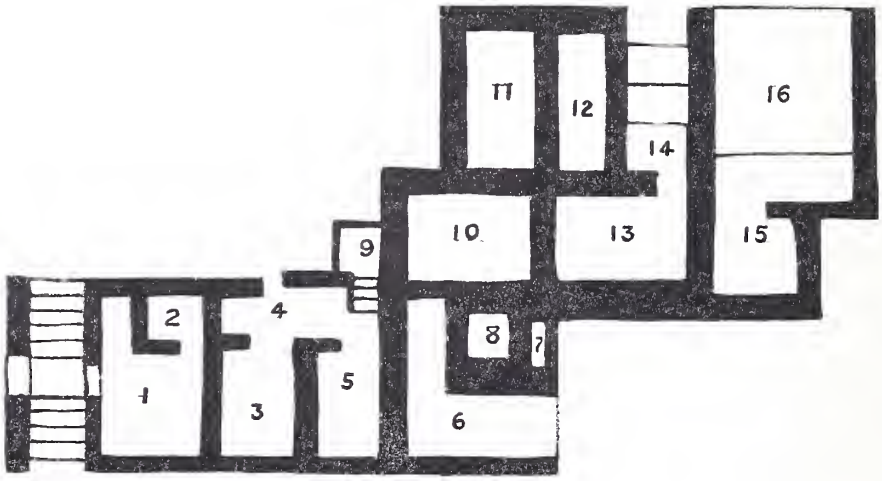


Fig. 8.

Palaikastro (*B. S. A.* Vol. IX, p. 301). Unfortunately the houses of the upper stratum were too completely destroyed to furnish much evidence upon which to base conclusions; aside from a number of cups belonging to Mr. Dawkins, Class B (*B. S. A.* Vol. IX, p. 302, Nos. 7-12), no entire vases were found.

As to the lower stratum (Middle Minoan I) we can speak with greater certainty, since we have two representative houses which luckily escaped subsequent rebuilding. One of these, House A, is a large, well-built structure (Fig. 8) on the northeast slope. A part of it runs beneath the foundations of the Late Minoan I house excavated in 1903. The northeast corner of the house was much disturbed by a heavy terrace wall and a portion on the southwest had been destroyed by denudation. It seems to have formed a large rectangle (20 m. by 12 m.) and to have stood at the junction of two streets, the one running along the hill north and south, and the other ascending the hill in

steps from east to west. The entrance is on the last mentioned street, but all the rooms in the vicinity were empty except for a few sherds and broken *pithoi*.

Room No. 12 was filled with numbers of plain red and black cups. The only decorated vase discovered was a fine specimen of Middle Minoan art, which, however, was badly worn (Pl. XXXII). It is a tall slender type of the hole-mouthed jar and is decorated with stalks of red and white lilies, the broad leaves of which curl about the body of the vase in a life-like manner which is very refreshing after the set geometric style characteristic of the preceding periods. The vase is a good example of the curious Middle Minoan practice of strict alternation of colors; thus we find two white and then two red flowers growing upon the same stalk.

From the same room comes a small cup of the shape shown in the *B. S. A.* Vol. IX, p. 302, No. 5 a. It is covered with a kind of iridescent paint which seems to have been peculiar to this house inasmuch as it was not found elsewhere on the Kephala or, so far as I know, on other Cretan sites. The paint is thin and hard, sometimes pink, sometimes blue, as the light happens to strike it; when dipped in water and placed in the sunshine, it gives somewhat the effect of a modern *cloisonné*. The fact that many of the vases of this house were covered with this peculiar paint leads one to suppose that the maker was a potter who made this ware his specialty. Further, the great number of bowls and lamps of exactly similar shape and design found in Room No. 16, make it probable that we have to do here with a shop as well as with a dwelling house. The iridescent cup, the bowl of which is decorated on the inside with a number of crosses in white paint, is typical of the favorite style of the period when cups and open bowls of the better class of ware were ornamented within as well as without.

From the room in the northwest corner of the house, No. 16, came an astonishing set of bridge-spouted bowls, fifteen in number (Pl. XXX b), and five stone lamps. The objects discovered in this house seem to have fallen from an upper story and were found embedded at various depths in a huge mass of the same clay plaster which so impeded our work in the big house of Period III. This clay formation must be due to some peculiar quality of the soil of the Kephala for it was found in houses of all periods, whereas at Gournia it was unknown. As a preservative for painted pottery this plaster is unequaled; this set of bowls emerged, after a good deal of patient effort, in a marvelously fresh condition. The white paint, generally so friable, stood the process of cleaning remarkably well. These bowls have none of the beauty of the tall jar just described, but they are none the less important. On some of them the bands are painted red and on others white, which shows that these two colors were equally in favor during this period. One vase is especially curious for, instead of the usual black background for the white and red paint, we have what appears to be a poor yellowish imitation of the mottled ware of

Period III. Without doubt it is an attempt to reproduce the original ware, specimens of which must have been frequently turned up in laying the foundations of new houses. It is evident, however, from the poor success of the imitation, that the secret of the brilliant mottled surface had long before been forgotten. One of these bowls and a very metallic-looking amphora are covered with the iridescent paint before mentioned; in the case of the latter, the effect is so successful that at first glance it might easily be mistaken for a vessel of bronze. From the same room comes the small jug with the plume pattern (Fig. 11) which is characteristic of the Middle Minoan period at Vasiliki and which, together with the scrolls and chevrons, seems to have been the favorite method in which dark paint on a light ground was used.

The remaining vases are of slight interest. They include a large dipper in poor clay found with the broken *pithoi* in Room No. 3, and an ugly squat jug with an irregular decoration of loops and bands in brownish paint. The vases with dark designs on a light ground are usually, both in clay and in finish, inferior to the black vases with white and red decoration. We must consider the first as the common cooking ware, while the second represents the better class of vessels in use in the Middle Minoan period.

Two of the five stone lamps could be preserved, but the three largest, all of which belonged to the pedestal type, were so rotten that it was impossible to do more than to measure them. The biggest showed a diameter of 62 cm.

HOUSE B.

This house lies just below the pits belonging to Period IV on the southeast part of the site and must have opened into a small paved street that once ascended this slope of the hill. The building was much overthrown owing to the shallow soil; in fact, only four rooms remained in an undisturbed condition.

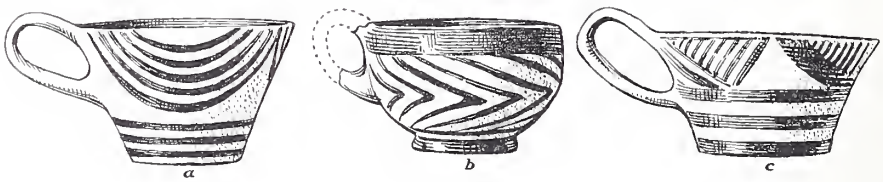


Fig. 9.

In one of these a great mass of pottery was found within 15 cm. of the surface. The whole deposit measured only 60 cm. in depth. Owing to this scanty covering of soil the paint and clay were in a very bad condition and a perfect vase often fell to pieces with its own weight as soon as taken from the ground. Fifty-seven cups and vases were saved, while forty others, repeating the same types, were too rotten to admit of any attempt to restore them. Luckily the

decorated objects are usually in finer, stronger clay, and it is to this fact that we owe most of the vases described below. Aside from this deposit, nothing was found except a few vases lying together in an adjoining room. These were the large *schnabelkanne* of Period IV (Fig. 7) which I have already mentioned, some undecorated cups, two *pithoi*, a hole-mouthed jar, and a large two-handled cup with a fluted edge in fine black painted ware.

The most noticeable objects from this large deposit are the cups (Figs. 9 and 10), which are new to Middle Minoan sites in eastern Crete. They are the typical shapes of the Palaikastro ware Class A (*B. S. A.* Vol. IX, p. 302, Nos. 1-5), but instead of the usual black ground with red and white decoration, these cups show a buff clay covered with a colorless paint, slightly polished, on which are applied geometrical designs in brown or black, some of which recall the linear styles of Period IV, for example, Fig. 9 c with the barred triangles around the rim might pass, if it were not for the color of its decoration,

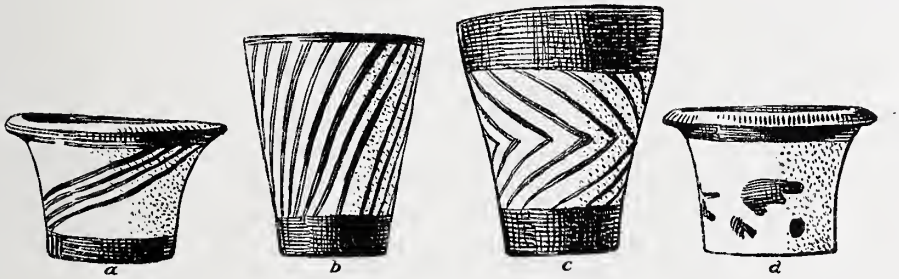


Fig. 10.

and for its handle, as a cup of Period IV; its shape corresponds to that of the cups with strap handles shown in Fig. 3 a, and in *Transactions*, Vol. I, Part III, Pl. XXVI, No. 1 and Pl. XXVII, Nos. 1-4. Fig. 10 c bears varieties of the horizontal chevron which is also found in Period IV (*Transactions*, Vol. I, Part III, Pl. XXX, No. 6).

Fig. 10 a, b show groups of oblique lines common on all small jugs of the Middle Minoan period (*J. H. S.* Vol. XXVI, p. 249). Fig. 10 d is an example of the spatter pattern, also a favorite mode of decoration for large jars in all periods. There were four examples of the plume jug (Fig. 11), but only one could be preserved. A large amphora, very much rotted, was covered with a bold scroll pattern, a design very common on large vases of this period.

Perhaps the most striking specimen of all is the large cover (Fig. 12) with a knob handle in the center. The decoration on the top is a complicated one, but characteristic of this class of dark on light ware. Three circular patches of paint are joined to one another so that each forms one corner of a triangular

design, the circular patches being, in reality, running spirals filled in with paint. From the sides of this design, irregular groups of fine lines run off to the edge of the cover; the sides are filled with long slender chevrons much like those seen on the cups (Fig. 10 c).

The vases, as I have said, are apparently a new style. If it had not been for the distinctly Middle Minoan I cups (Pl. XXXI, Nos. 1 and 2) found with them, it would have been difficult to decide to which period they rightly belonged. The fact that the slender black cup shown in Pl. XXXI, No. 1—which is very like Middle Minoan I cups from other sites—was found partly inside the cup in Fig. 10 c leaves no doubt as to the proper place of these vases in Cretan chronology. The plume and the scroll designs are frequently found throughout the Middle Minoan period, but, like the drip and spatter pattern, they seem to have lived on long after the true Kamares fabrics had died away and thus in themselves they cannot be regarded as indisputable evidence as to date. As was the case in House A, the dark on light ware is always inferior to the light on dark Kamares fabrics. On the former class of vessels we find the paint carelessly and hastily applied, the clay soft and poor and the shapes less regular and finished in appearance than n the latter class. The two cups (Pl. XXXI, Nos. 1 and 2) are representative specimens of the better class of ware and are very similar to the beautiful ones from the cemeteries at Palaikastro (*B. S. A.* Vol. IX, p. 305). No. 1 is a common type of which several other vases in a more or less fragmentary condition were found on various parts of the hill. This specimen is unusually ornate; its decoration includes the swastika, a symbol which seems to have occurred frequently on the Middle Minoan I ware of Vasiliki, but which is not found in any of the preceding periods.

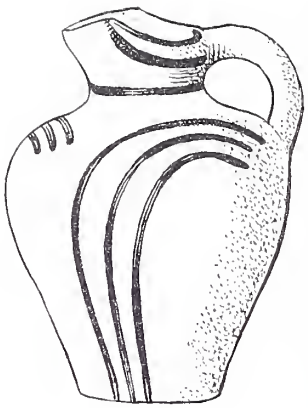


Fig. 11.

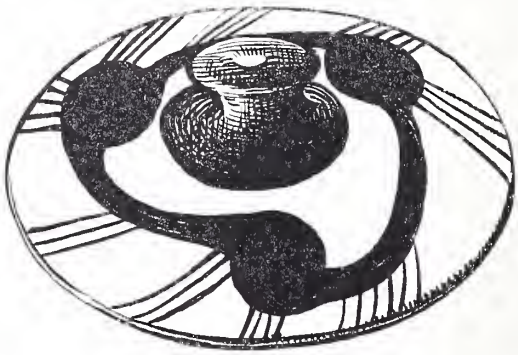


Fig. 12.

No. 2 in Pl. XXXI, an exquisite cup with fluted edge, is decorated with strange collections of geometrical designs which are peculiarly the product of the Middle Minoan period. The strict alternation of colors is again noticeable; a

figure in white is always followed by a figure or figures in red until the original white figure reoccurs. On the inside of the rim an unintelligible clay handle has been fastened, so small that it could not possibly have been of use. It is doubtless to be regarded as the survival of a handle characteristic of the metal prototype of this cup. The other cups from this deposit are either made of plain clay or are covered with a dark ground paint on which a white festoon is painted, sometimes upon the body, or again below the rim inside.

It is interesting to see the first evidences of the great change from geometric and conventional designs to the naturalistic style which reaches its fullest development towards the end of the Middle Minoan period. The Middle Minoan artist is still more or less influenced by the geometric tradition, but by slow degrees he is becoming emancipated and except for the chevron and an occasional cross-hatched triangle he has almost abandoned the rectilinear for the curvilinear style and even this disappears as the period advances to make room for the naturalistic motives which reach their best at the dividing line between the Middle and Late Minoan periods.

The beautiful cup in Fig. 3 d was found in a house across the road from the main entrance of House A. It is interesting as a connecting link with Knossos, where a similar cup is classed among the best egg-shell Middle Minoan II ware from the Palace. The house in which our example was found had been utterly demolished and although many exquisite Middle Minoan II sherds were found, this was the only piece that could be restored. It belongs to the best class of ware of the period and shows the combined styles of the dark on light and light on dark, for white bands, now barely visible, encircled the vase near the rim and base. It gives the effect of a full-blown cup-shaped flower and recalls the steatite blossom bowls where the same floral idea has been worked out in coarser materials. With this vase we must leave the Middle Minoan period and pass over a long space of time to the Late Minoan III beehive tomb at Hagios Theodoros.

Fig. 13.

Beehive Tomb at Hagios Theodoros.

Early in May a peasant brought word that in digging his vineyard at Hagios Theodoros, a fertile hillside above the Kephala, he had uncovered the top of a large beehive tomb, and, to my surprise, his story proved true. When we had removed the capping-stone, a large terra cotta *larnax* and several broken

vases were plainly visible above the small quantity of earth which had sifted inside. As soon as the opening was large enough to pass through, it was seen that the burial had already been disturbed. The bones and vases were broken and strewn about the floor, but the robbers, who must have entered through the doorway, had built up the entrance on leaving, so that there were no signs from without that the tomb had been rifled. This must mean that the robbery was committed soon after the burial, and that all traces of the secret entrance were concealed in order not to awaken the suspicions of the dead man's descendants. The bones were in a very rotten condition; of the skull only two small bits remained. Judging from the size of the leg-bones and from the bronze dagger found in the *larnax*, the body must have been that of a man. The *larnax* stood against the wall on the left side of the entrance, and but for one or two small breaks in the rim, was taken out entire. It was of unusual size, measuring 1.50 m. in length, 60 cm. in width and 52 cm. in height. The decoration, from long exposure to the air, had practically disappeared except in one place where there were traces of the conventionalized octopus design, so common on Late Minoan III *larnakes*. The fragments of the vases that were lying on the floor of the tomb had suffered in the same way; only one, which happened to have been covered with earth, had its design preserved entire. The floor of the tomb was of yellowish clay covered with about 10 cm. of fine dust in which lay the bones and vases. In the *larnax* itself were a small bronze dagger, a gold pendant, and three carnelian beads which had apparently been overlooked when the tomb was plundered. Whether the beads and the pendant belonged to the same necklace it is impossible to say with certainty, but the shape of the pendant is such that it could not have formed one of a string of similar ornaments. It is pierced through the stem and must have either hung by itself or have formed the central ornament of the necklace to which the carnelian beads belonged. Like most gold ornaments of the period, it is hollow, the decorated face being riveted to the back and sides. The design represents, in a conventionalized form, the Egyptian lotus bud.

The vases are unusually good for so late a period as that to which this tomb belongs, viz., the very end of the Late Minoan III period when the style of art had reached its lowest ebb just before the geometric epoch begins. The best piece is a round bodied stirrup-cup on a small foot decorated with an ornate type of the conventional octopus. The eyes are very large, the body has almost disappeared, while its arms, reduced to two in number, form two graceful spirals on either side of the head (Pl. XXX c). The clay is very fine and hard and quite unlike the soft material used in the succeeding geometric period. Two of the three remaining vases are of basket form, one decorated with the most degenerate of all octopus motives. The body of the animal has quite disappeared, a single arm forming a wavelike pattern around the central part of

the vase. The other vase, similar in shape (Pl. XXX d) but badly destroyed, bears another design familiar in this late period, viz., that of the Triton shell, the *Purpurschnecke* of Furtwängler and Loeschcke, but in this case so conventionalized in form that the original motive can with difficulty be distinguished. The last vase is similar to a Cypriote pilgrim-bottle with no base; it is decorated on either side with a series of concentric circles. Both shape and design are common in the ware of this period. The bones and skull of a dog were found among the scattered human remains. Possibly the animal was offered as a sacrifice, but it is more probable that he was killed in order to accompany his master on his final journey.

This beehive tomb is interesting since it is, I believe, the second of its kind belonging to the bronze age that has been found in Crete. The first was found at Palaikastro in 1902 (*B. S. A.* Vol. VIII, p. 303), where it seems to have been an innovation which did not meet with much success. The architect of the tomb at Vasiliki did not make the mistakes in construction which caused the collapse of the tomb at Palaikastro. The roof was as firm when we opened it, as on the day when the capping-stone was put in place. The dromos was short, about three metres in length, and the doorway, 80 cm. square, was just large enough to allow the *larnax* to be taken in and out, which proves that it was not necessarily put in from the roof as in the case of the similar geometric tombs found near Kavousi by Mrs. Hawes. The wall blocking the doorway was made of small stones built against the outside faces of the three big slabs forming the lintel and jambs. There were no remains of any sort outside the tomb-chamber. Unlike the other tombs of this period, this seems to have been an isolated burial. The diameter of the chamber was two metres; the walls, composed of large flat stones, laid in overlapping courses, came together at a height of 1.80 cm. from the floor. No stones had fallen inside and the breaks in the rim of the *larnax* must have been caused by the plunderers. Since the capping-stone was large and heavy and since, after its removal, the upper circle of stones had to be partly removed before anyone could descend into the chamber, it seems probable that the previous entrance was made by the dromos, especially as anyone wishing to work quietly without attracting attention would not attack stones which took four men half an hour's hard work to remove and which he would be obliged to replace. The wall of small stones blocking the door could be easily rebuilt, so that it is probable that the robbery was committed before the dromos had been allowed to fill with earth when no digging would have been necessary to reach the entrance.

In saying that only one other bronze age beehive tomb had as yet been found in Crete, I did not include the *tholoi* of Hagia Triada and Koumasa, which seem to have been huge circular charnel houses in which many bones were piled indiscriminately and which do not appear to have had a roof at all. Such

tholoi are all of a very early period and cannot be classed with isolated burials of the Late Minoan III period, when the roofed beehive tomb seems to have been an innovation in Crete. It was probably copied from a form of sepulchre in common use on the mainland, and cannot be considered as native either to Crete or to the surrounding islands of the Aegean.

R. B. Seager.

POTTERY FROM VASILIKI.

1

2

Decorated Cups of Middle Minoan I Period.

Decorated Vase of Middle Minoan I Period.

FIVE RED-FIGURED CYLICES.

Among the Greek vases in the Free Museum of Science and Art there are a number of red-figured cylices which are of considerable interest for one reason or another. They were acquired at different times and came from different places, but all of them, so far as is known, were found in the cemeteries of Etruria. Most of them belong to that most interesting class, the Attic vases painted in the so-called severe red-figured style, and they date, therefore, chiefly from the early years of the fifth century B. C. A few are earlier and a few are of later date. None of them, with one possible exception, bear the signature of the artist; but two have καλός names, and several can be associated with the work of known painters. In the present paper I propose to discuss five of these vases.

I

The Cylix with the Name Epilycus.

The first of these vases to be considered is the one which bears the Museum number M. S. 3499. It was found at Orvieto. Its diameter is 29.3 cm. and its height 9.5 cm. which is also the diameter of the base. It is decorated within and without with figures of warriors. On the inside (Fig. 1) a man with a himation thrown over his shoulders and wearing a helmet, but otherwise nude, is running to the left. He is looking back over his shoulder as if in dread of pursuit. In his right hand he holds a straight sword as if to thrust; and on his left arm he carries a round shield with a rooster for an emblem. The rim of the shield with the heads of the nails on it is also indicated. The helmet has cheek pieces, and a crest decorated with two rows of dots. The himation is thrown over the shoulders and the two ends hang down in an impossible way, one falling by the right side and the other below the shield. The very mechanical folds on the shoulders and on the right end cannot, however, rightly be attributed to the painter, for the vase has been considerably injured in this place by breaking and also somewhat rubbed and repainted, and these lines are the work of the restorer. For the same reason the details have disappeared from the body of the warrior, and a small part of the shield is uncertain. The eye is seen as if in full front although the face is in profile. The figure is not carefully drawn, but nevertheless it has considerable life. It is noteworthy that the

painter sacrificed part of the helmet and of the shield in order to make the warrior more nearly fill the space. Below in the field is the inscription

H O L A L K A <

that is, ὁ πα[ῖ]ς καλ[ός]. It is to be noticed that the *pi* is upside down, and the two *alphas* and the *lambda* are on their side. The aspirate is expressed by

Fig. 1.

H. The missing letters were upon pieces of the vase which have become lost. A plain, narrow band in the natural color of the clay serves as a border.

On the under side the drawings are much better. Here we have two scenes of combat, or perhaps two parts of the same combat, in which four pairs of warriors are engaged. On one side (Pl. XXXIII), at the left, near one of the handles, a bearded man who is evidently wounded has fallen into a sitting position. His left leg is bent under him, but he props himself up with his left

arm and shield and thrusts at his antagonist with his spear. He is nude except for his helmet which has cheek pieces, and a crest adorned with the same double row of dots which appear upon the helmet of the warrior on the inside of the vase. But here the rows of dots are placed side by side. The end of his plume hangs down behind his right shoulder. He has a pointed beard, and four locks of hair project from beneath his helmet. The shield is round and bulging and has upon it as an emblem a tripod. The support for the arm is seen as well as certain strings or tassels attached to it. The eye, as in the case of the figure on the interior, is not in profile, although the side of the face is towards us, but it is here drawn with a slant. One straight line serves for both nose and forehead. In spite of his wounded condition the warrior is smiling serenely as is often the case in archaic art. The anatomical details which the artist has added are rather mechanical and do not improve the figure. This is true also of the other figures on the vase and it is evidently a characteristic of the painter. The general resemblance which this wounded man bears to the wounded warrior of the east pediment of the temple of Aphaea at Aegina is worthy of notice, although of course, the analogy cannot be pressed too far.

Upon this wounded man there advances from the right an opponent with a rather sinister expression holding in his right hand a lance which he is thrusting at his fallen foe. He, too, wears a helmet with cheek pieces, and a crest also decorated with two rows of dots. Over his shoulders he has a light himation with the ends hanging down over each arm somewhat after the fashion of the figure on the interior of the vase. Otherwise he is nude. On his left arm he carries a light, oblong shield indented at the upper side, a form of the *pelta* which the vase painters sometimes make the Amazons carry. It has as an emblem two quails facing each other, perhaps in the act of fighting. A somewhat similar design occurs upon a vase of Cachrylion in the British Museum. [1] The shield is divided into two parts by an ornamental band of dots with two lines on either side.

To the right of this pair of combatants are two more. A youthful figure wearing a helmet similar to those already described, and carrying a round, bulging shield on his left arm advances furiously upon a fallen enemy. He wears upon his back a leopard skin with the fore paws tied in front while the tail and hind paws hang down behind. His shield has the rim indicated like the other shields, and it bears as an emblem two dolphins facing in opposite directions. In his right hand he holds a short spear which he is thrusting at his enemy. Four locks of hair protrude from beneath his helmet. The eye and mouth are so drawn as to give a set expression to the face.

The fourth figure is resting on his right thigh with his right leg bent under him. His body is twisted into an impossible position, for while with his right

[1] Cf. Murray, *Designs from Greek Vases*, Pl. VII, 25.

arm he is thrusting at the enemy behind him with his lance, he is at the same time leaning on his shield with his left. This warrior, too, wears the same style of helmet, from beneath which four tangled locks of hair fall; and he carries a bulging shield with a tripod for an emblem. The face is peculiar. The large thick nose turned up at the end and the partially opened mouth give an expression of ugliness and disgust which was perhaps, intended to express pain. A break in the vase has injured this figure somewhat, but the correspondence between this and the other fallen warrior in the composition is worth noticing.

Above the figures and close to the rim is an inscription, much injured, which is the most interesting feature of this vase. As in the case of the inscription on the interior, the red paint with which the letters were put on has almost entirely disappeared, and the forms of the letters are shown by the discoloration on the black surface where they had once been. An inscription in this condition is not easy to read, especially when the letters were originally carelessly written. It runs as follows:

It is clear that this is in part retrograde and in part runs from left to right. It seems to read Ἐπ<π>ίλυκος κα[λ]ός. The second letter in the name was made with three strokes as a magnifying glass shows, and may well be a π upside down. The third letter, too, may be a defective π. The last letter but one has so nearly disappeared that the faint traces of it which remain are visible only when the vase is held at a certain angle towards the light, but it seems to have been an ο. Epilycus is known both as a painter and with the epithet καλός. The spelling with a double π is, of course, an error, although not without parallel on Attic vases.[1]

On the other side of the vase (Pl. XXXIV) there are also two pairs of combatants. At the left is a youthful warrior running towards the left, but looking back over his shoulder at his pursuer. He, too, wears a helmet like those on the other side of the vase and carries a spear and shield. The greater part of the shield has been lost by a break in the vase. His himation has slipped down about his waist and one end of it flies out behind.

He is pursued by another youthful warrior armed with shield and helmet and holding in his right hand a κοπίς or sword with bulging blade. He wears his himation like the warrior with the quails on his shield, that is, thrown over his shoulders with the ends hanging down, but he is otherwise nude. Four curly locks protrude from beneath his helmet. For a device he has upon his shield the fore part of a boar. On the crest of the helmet are two scratches, perhaps put on by the artist before he drew the figures; and here, too, may best

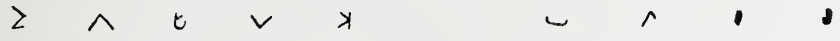
[1] Cf. Kretschmer, *Die Griechischen Vaseninschriften*, p. 173.

be seen two parallel lines 2 mm. apart and 5 mm. from the rim which run all the way around the vase. They were scratched in with a blunt tool before the paint was put on.

Next to this warrior, is a youth wearing a leopard skin advancing to the right to attack a fallen enemy. In his left hand he holds above his shoulders a shield upon which as an emblem are two dolphins both facing the same way. In his right hand he holds a short spear with which he is prodding his opponent. He wears a very peculiar helmet, probably of leather, ending in a point behind the head and with flaps hanging down in front of the ears. A similar helmet is worn by an Amazon on an amphora in the British Museum.[1] Four curls are seen below the helmet and other hair is indicated above the forehead. The long pointed piece which seems to be attached to the helmet is really the tail of the skin which the man is wearing. His face is most peculiar. He has a projecting chin, nose slightly turned up, large eye, and the archaic smile. The face is feminine rather than masculine.

The warrior whom he is attacking has fallen backward upon his right elbow in such a way that his right leg is doubled under him. He holds a straight sword with a guard to it in his right hand, but makes no attempt to ward off the assault upon him. With his left arm he holds over his body a round bulging shield with a wreath of ivy leaves for a device. As in the case of so many of the other figures, locks of hair, in this case six, fall from beneath his helmet. The pointed beard and snub nose make this man look like a satyr. The half open mouth was evidently intended by the artist to indicate pain. The figure has suffered a little by a break in the vase, but fortunately the head is uninjured.

Above the figures, as on the other side of the vase, is an inscription of which one word reads from left to right and the other from right to left. It is



which I read παῖς καολς for παῖς καλός. The letter π is upside down, as are the α and the λ in καλός. The ο and λ have been transposed through the careless writing of the artist.

There are no palmettes under the handles to separate the two groups, but the artist has carried his composition all the way around the vase. It is not difficult to see what he had in mind in painting these scenes on the under side of the cylix. The leopard skins, the peculiar leather helmet, not to mention the κόπις or sword with bulging blade, and the form of the *pelta* make it plain that the contest is a battle between Greeks and Trojans. Such contests are often represented on Attic vases. Sometimes the heroes have their names attached, but more often they are left nameless as here. But the presence of the names where they do occur makes the painter's meaning certain.

[1] The vase is No. E 295. Cf. Millingen, *Ancient Unedited Monuments*, I, Pl. 19.

It is interesting to note that in this vase we have related subjects on the inner and outer sides. On the inside there is a single warrior and on the outside eight more. Moreover, the nude running figure on the inside, although not so well drawn, is a brother to those on the outside, and wears his himation thrown over his shoulders in the same way as the warrior with the *kopis* and the *pelta*. Every one of the nine wears a helmet and carries a shield, and in all but one case the shields are adorned with devices familiar from other vases. The broken shield, no doubt, had a device also.

The grouping of the figures at once attracts attention. The warriors are really engaged in fighting single combats, and instead of having one central figure or group upon which to concentrate our attention, we have on each side two groups with the action moving away from the centre. Such an arrangement of the figures is characteristic of Attic vase painting before the time of Euphronius; and in this respect the groups resemble early pediment sculptures. This is especially striking in the first two groups where the two fallen warriors might well be the figures in the corners of a pediment. In fact the painter had to solve here a very similar problem to that of the sculptor, for he had to carry his design under the handles of the vase. The resemblance of the bearded figure, wounded but smiling, to the wounded warrior of the Aegina pediment has already been noticed, and shows that we have here an example of a motive familiar to early artists, sculptors and painters alike. The vase painter merely followed his more distinguished contemporaries. The heroic nudity of the figures is another point which they have in common with sculpture.

The outside of the vase is much better painted than the inside, although one hand clearly decorated both parts. The motive, to be sure, is an old one, but the warriors on the under side are painted with considerable freshness and vigor. The heads are especially well done and the faces have a distinct individuality. On the other hand there are evidences of bad drawing, as, for example, the right leg of the warrior with the leather helmet, and the feet generally. The eye is treated in two different ways. We have it as if seen in full front as in the two standing figures on Pl. XXXIII, or the warrior with the boar on his shield; and again we have the slanting or curved eye, as in the bearded warrior of the first group. The standing figures have given the artist some trouble, for in order to keep them from being too small he has been obliged in each case to sacrifice part of the crest of the helmet.

The period when this vase was painted is not hard to determine. The running, crouching figure filling the whole of the interior, the simple line in the natural color of the clay, instead of a meander, used for a border, the grouping of the combatants in pairs on the under side of the vase, quite apart from the inscription, mark this cylix as the work of one of that band of vase painters known as the group of Epictetus. But it is not so easy to say positively who the painter was. Counting fragments there are altogether about a dozen vases

in existence besides ours bearing the name of Epilycus. Of these a vase in the Louvre (No. G 10) is signed Ἐπίλυκο[ς] [ἔ]γραφσεν καλός. Fragments of a cylix in Berlin and another set of fragments in the Louvre also seem to bear his name as the painter, although in the latter case only the last three letters of the name remain. The peculiar feature of the signature is that the artist calls himself καλός, for this seems to be the correct interpretation of the word, not καλῶς as Klein suggested.[1] These three vases are the only ones which have the name of Epilycus as painter; upon the others he is simply called καλός. Pottier has discussed the whole series at length[2] and has reached the conclusion that not all the vases bearing the name with καλός attached are the work of Epilycus. In fact he distinguishes two or three different styles. This means that there were two or three different painters who wrote Ἐπίλυκος καλός on their cylices. Some of these, however, bear so close a resemblance to the signed work of the artist that they may, with some confidence be assigned to him. Pottier in the Louvre Catalogue[3] mentions several vases which in his opinion may be attributed to Epilycus. Among these is a small cylix in the Louvre having no exterior decoration, but adorned on the inside with the figure of a running youth carrying shield, spear and helmet and looking back over his shoulder.[4] His position resembles that of the running warrior on our vase, and the shield with its rim and nails, and the rooster for an emblem is almost identical. But here the resemblance ceases, for the youth on the Louvre cylix is much better drawn. He might, however, be compared with some of the figures on the under side of our vase. Pottier thinks a long nose and a prominent chin may be regarded as characteristic of the faces of this painter, and these are prominent features on several of the faces on our cylix. Notice for example, the drawing of the nose in the two figures at the right in Pl. XXXIII, and the nose and chin of the warrior with the leather helmet in Pl. XXXIV. If, therefore, these are true characteristics of his work there is good evidence for assigning our vase to him; but until more specimens with the word ἔγραψεν are found, the peculiarities of his style must remain to a certain extent doubtful. Moreover, the inscription on our vase cannot be definitely classed as a signature rather than as a καλός name. But Epilycus is beginning to take a definite place among the other contemporaries of Epictetus, and if the vases assigned to him are correctly assigned he must be regarded as one of the more skilful painters in the group. At all events the Museum vase may be dated shortly before 500 B. C.

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[1] Cf. Pottier, *Cat. des vases antiques du Louvre*, III, pp. 891 f.

[2] *Mon. Piot*, IX, pp. 135–178; cf. also *ibid.* X, pp. 49–54, and *Cat. des vases antiques du Louvre*, III, pp. 891 ff.

[3] III, p. 892.

[4] Cf. *Mon. Piot*, X, p. 50, Fig. 1; also Klein, *Meistersig.* p. 115, No. 4.

II.

The Cylix with the καλός Name Lycus.

The next vase to be considered bears the Museum number M. S. 2444. It is a cylix 23.5 cm. in diameter and 9.5 cm. high. The diameter of the base is 9.6 cm. In the centre stands a nude youth with his weight supported by his left leg (Fig. 2). His right leg is bent back so that the toes alone touch the

Fig. 2.

ground. His right hand rests against his side above his hip, while his extended left hand grasps a staff upon which he is leaning. His body is seen in full front, but his head is turned to the right and he is looking down. A band in the natural color of the clay is left about the head as a fillet. The staff is a straight stick with a cross piece at the top for a handle. In the field at the left of the youth is a pouch which has been repainted. It was probably originally like the pouch holding the discus on the under side of the vase (Pl. XXXV a). On the

ground are two ἁλτῆρες or jumping weights. At the left of the youth's head is the word καλός written retrograde. At the right, below the youth's arm, is the name L ∨ K O Z that is Λύκος, running in a slanting direction downwards. The first three letters are at the left of the staff, the other two at the right of it. Around the circle is a border of running meander much repainted. The whole interior of the vase has been considerably damaged and repainted. In fact the inscriptions were not discovered until the vase was cleaned and some of the modern paint washed off.

The under side is in much better condition. On either side of the handles are scenes from the palaestra. On one side (Pl. XXXV a) are two youths engaged in a wrestling match while a bearded trainer looks on. At the left stands the trainer, his weight resting chiefly on his right leg. His left leg is crossed behind him. He wears wrapped around his body in such a way as to leave his shoulders bare, a himation ornamented with a black border. Under his left arm, which is hidden beneath his cloak, is a staff which helps to support him. In his extended right hand he holds a forked stick with which he is enforcing fair play. This mark of his authority is often represented on the vases. The face is in profile, although the eye is not. Back of the trainer is a fluted pillar upon a plinth, and behind his head is the retrograde inscription in red, καλός.

In front of this bearded man are two youths wrestling. They are both nude, but both have bands about their hair painted red. The one at the left has seized his opponent's left arm just below the elbow with his left hand, while his right passes over his opponent's neck and under his body. His chin is pressed down upon his opponent's right shoulder so as to prevent him from using his right arm effectively. The second wrestler is on all fours waiting for a chance to break the hold of his antagonist. The hands of the second wrestler are noteworthy. The fingers of the left hand are very long, while those of the right are poorly drawn. Above this figure, in the background, are a sling-shaped pouch holding a discus, and a jumping weight; while behind the first wrestler are two crossed javelins, or hurling-rods, stuck in the ground. The eyes of both wrestlers are as if seen in full front, though the faces are in profile.

On the other side are three nude youths engaged in athletic exercises (Pl. XXXVb). To the left is a youth moving to the left though looking back. In his extended hands he holds a long cord painted red. His face has been somewhat injured. About his head is a band in red. To the left are two hurling-rods, with thongs painted red wound about them at the middle, thrust into the ground.

The second figure is the finest on the vase. It is entirely uninjured. The youth is seated on the ground with his right leg extended and his left bent. He has turned partially round and is looking at the youth with the cord whom he is evidently addressing. He is gesticulating with both hands as if in remon-

strance. About his head is a fillet painted red. The face is beautifully drawn. To the left is the retrograde inscription καλ[ό]ς. The ο and part of the λ are destroyed by a break in the vase. Above, in the background, is a bundle of ἱμάντες, or thongs such as were used by boxers, tied with a red cord.

How comes this youth to be sitting on the ground, and what has he to do with the youth holding the rope? At first sight one might think that he had made a long jump and had fallen, and that the youth with the cord was going to measure the distance. But this will not explain the position of the first figure, who seems to be moving away from the man on the ground; and, furthermore, the absence of jumping weights makes it unlikely that the second figure has been jumping. Upon a cylix in the Hermitage at Saint Petersburg, discussed below (Fig. 3), there is a similar figure sitting on the ground but looking forward, and both he and the standing youth behind him have pieces of rope in their hands. The purpose of the ropes seems not to be generally understood, although it was explained as long ago as 1842 by Roulez.[1] The position in which they are held makes it certain that they were not used for jumping. The two youths have been engaged in the game or contest described by Pollux,[2] as σκαπέρδη. One way of playing it was this. A post with a hole in it was set firmly in the ground and a rope passed through the hole. Two youths were then placed back to back at either end of the rope and each tried to pull the other as far as the post. The game as represented on our vase, and, in fact, generally when it appears on the vases, is of a simpler form, also recognized by Pollux.[3] No post is used. The two youths placed back to back, have been pulling on the rope in a sort of "tug of war" contest, and the one at the left has pulled the other over backward. The hurling-rods stuck in the ground at either side of the scene may, perhaps, represent goals or boundaries; although they may, of course, merely be intended to emphasize the fact that the scene is in the palaestra. On the vase in Saint Petersburg the rope has parted at the moment when one of the two youths is about to prove victorious.

To the right of the two contestants is a third youth holding in his right hand a hurling-rod which he is about to cast. About the middle is a thong, ἀγκύλη, painted red which he is holding with his fingers. He is moving to the right, but looking back at his rod. He has a red band about his hair. His left hand which is raised, has been much injured. In front of him are two more hurling-rods with thongs attached, stuck in the ground. The space under the handles is left vacant.

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[1] *Mémoire pour expliquer une coupe de Vulci*, p. 17. Hartwig accepts this explanation in his *Meisterschalen*, I, p. 557, where he discusses the vase in Saint Petersburg.

[2] IX, 116.

[3] After explaining the more complex form of the game he says (IX, 116), ἔσθ' ὅτε μέντοι καὶ τὰ νῶτά τινες προσθέντες ἀλλήλοις ἀνέλκουσιν ἑνὶ δεσμῷ δεθέντες.

The most interesting feature of this cylix is the καλός name Lycus found on the interior. This, together with the style and subject, enables us to assign the vase to the little known master Onesimus. The late Professor Furtwängler saw the vase in 1904 and thought it the work of the "Panaetius master," [1] but

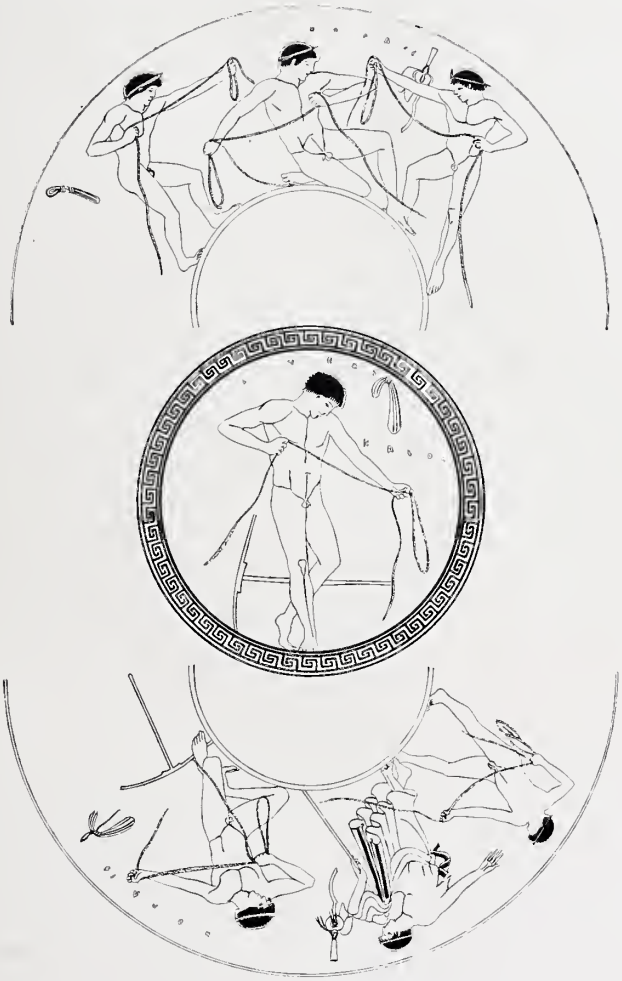

Fig. 3.

it had not been cleaned at that time and the inscription was not then visible. The name Lycus occurs on one signed vase of Euphronius; and it is found upon a second which Euphronius signs as potter and Onesimus as painter. The identification of the latter is really due to Hartwig, who has made a careful

[1] *Sitz. Mün. Akad.* 1905, II, p. 259.

study of the vases bearing the name Lycus.[1] The name, however, cannot be regarded as settled beyond dispute, for on the vase in the Louvre,[2] upon which the signature occurs, only the letters ιμος remain. But Hartwig is probably right in restoring the word as [Ὀνέσ]ιμος. Of the vases discussed by Hartwig, the one in the Hermitage at Saint Petersburg (Fig. 3) bears the most striking resemblance to the Museum cylix. In the interior is a youth posed much as the youth in the interior of our vase. His weight rests on his right leg, his left is drawn behind it and he is looking down in the same way. He holds a cord. In the field is a bundle of thongs, ἱμάντες, and the name Λύκος καλός. On the under side are two groups of three figures. One group consists of three youths each with a piece of rope in his hands. The figure in the middle is sitting on the ground very much like the seated youth on our vase. He, too, has been pulled over backward. The third youth is waiting for his turn to enter the game. On the other side are two youths with ropes, while the third figure between them leans on a staff resting under his left arm like the trainer on the vase in Philadelphia, and he likewise wears a himation with a black border. The drawing, especially of the faces, and the positions of the figures makes it certain that the two vases are the work of the same hand. Whether the artist's name actually was Onesimus or not must still be to a certain extent doubtful, but the cylix in the Museum is an interesting addition to the list of his works, which have so far come to light.

Pottier [3] argues that all the vases bearing the name Lycus must have been made at the beginning of the fifth century B. C. Our vase must, therefore, date from about 500 B. C. or a few years later.

III.

The Cylix with the Horns.

The third vase which I wish to consider is numbered M. S. 2448. It has a diameter of 24 cm., and a height of 9.6 cm., which is also the diameter of the foot. It is decorated on the interior only; the under side is painted black. In the centre is a youth moving to the right. (Pl. XXXVI). He wears a chiton, which has slipped down from his shoulders and hangs about his waist, leaving the upper part of his body bare. He is bare-footed. About his head is a wreath painted red. In his right hand he holds behind him a pig by the left hind leg. His left hand is extended in front of him and holds a horn-shaped object adorned with branches painted red. It is tipped slightly so that part of the bottom shows. A break in the vase has destroyed part of this object, but

[1] *Meisterschalen*, I, pp. 503–562.
[2] No. G 105; cf. Hartwig, *op. cit.* Pl. 53.
[3] *Cat. des vases antiques du Louvre*, III, p. 943.

so much of it remains that there can be no question as to its restoration. In the field is the inscription ὁ παῖς κα[λ]ός. A small break has destroyed the λ and part of the pig. The drawing of the youth is very careful, but the pig can hardly be said to be true to nature. About the whole is a border of running meander.

It is evident from the pig and from the garland which the youth wears about his head that he is going to perform a sacrifice. But what is the object which he holds in his left hand? At first sight one might say a basket, but a more careful examination of the drawing shows that this cannot be right. The shape of the object is such that it could not be easily used for carrying anything. Furthermore, the position of the youth's fingers shows that he is grasping it with his thumb on one side and his little finger and second finger on the other. That is, it cannot have been more than about five inches wide. The branches which adorn it show that it had an important part in the sacrifice. There are often found on Greek vases, objects usually with three points, which are commonly referred to as baskets. Some of them undoubtedly were baskets, but others have not as yet been satisfactorily explained. I have, however, been unable to find on any vase an object exactly like that carried by this youth. I believe, though I say so with some caution, that we really have here a survival of the horns of consecration found at Cnossus and at various other sites in Crete. The shape is identical and the adornment with branches may, perhaps, be paralleled by a gem found in the Idaean Cave in Crete (Fig. 4).[1] Furtwängler in discussing this gem[2] takes the object standing on the altar or table for a basket, but this certainly cannot be correct. Such pairs of horns made of stone or terracotta have been found in abundance in Crete, and their weight alone, not to mention their shape, would preclude their use as baskets. They also appear on the fresco found at Cnossus, representing the façade of a temple. These horns are discussed by Evans in his *Mycenaean Tree and Pillar Cult.*[3] They were moved about from place to place; sometimes they were put in front of the sacred pillar and sometimes they even seem to be symbolic of the divinity to whom the offering is made. Evans thinks he finds traces of them on altars as late as

Fig. 4.

[1] I am indebted to Professor J. R. Wheeler for this reference. It is possible, as Evans suggests (*Myc. Tree and Pillar Cult*, p. 43) that the branches represent cypress trees and the horns are supposed to be in front of them.

[2] *Gemmen*, III, p. 45.

[3] Pp. 37 ff.; cf. *J. H. S.* XXI, pp. 135 ff.

imperial Roman times; and Furtwängler[1] calls attention to several Attic vases upon which horned altars are to be seen. All this accords very well with the scene on the Museum vase where the pair of horns certainly seems to be a ritual object.

It may at first sight seem incredible that a cult object in use in Crete in prehistoric times should still be employed in Athens in the fifth century B. C., but sacred objects are slow to lose their divine character, and Evans has pointed out that these horns of consecration existed at Mycenae. In the third shaft grave at Mycenae there were found two gold representations of a shrine, and three more were discovered in the fifth grave.[2] Upon each of them there are no less than seven pairs of these horns. This proves that the horns existed upon the mainland of Greece and the failure to find examples of them in stone would seem to indicate that at Mycenae they were generally of some perishable material. Herodotus[3] tells us that the Athenians got some of their religious practices from the Pelasgians; and if these Pelasgians were the people whom we call Mycenaeans, as is now generally agreed, it would not be surprising that the use of the horns of consecration came into Attica from that source. They must, however, have been made of wicker or of some other perishable material. Where three-pronged objects which cannot be identified as baskets are found on the vases they may perhaps be intended as horns of consecration. In such cases the third prong would represent what was left of the double axe or column so often represented between the horns in Crete. At all events we seem to have here an inheritance from the prehistoric period.

IV.

The Cylix with the Red Ivy Border.

The fourth vase is a large cylix found at Orvieto and numbered M. S. 3436. Its diameter is 31 cm., its base 12 cm., and its height 13 cm. On the interior (Pl. XXXVII) are two women standing and looking at each other. The one at the left wears a long chiton and over it a himation reaching below the knees, and wrapped about her in such a way as to conceal her arms. The himation is also bent over in two thick folds at the neck forming a sort of collar. The painter evidently wishes us to think of it as a thick woolen garment. The folds are indicated by black lines, while those on the chiton are put on in diluted glaze, having a yellowish brown color. The feet project below. The face is in profile turned to the right and the eye, too, is in profile. Upon her head this woman has a cap with a top-knot, *saccos*, concealing her hair except for a lock

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[1] *Gemmen*, III. p. 45, n. 4.

[2] Schuchhardt, *Schliemann's Excavat.*, English Trans., p. 199.

[3] II. 51 ff.

in front of her ear and another over her forehead. The ear is carelessly drawn. The eye is like a letter V on its side with a dot in the middle; the eyebrow is indicated above. The lips are parted and the expression is one of stupid astonishment.

To the right is a second woman looking back at the first but with her body partly turned to the right, as are her feet. She is slender and taller than the other woman, but like her wears a chiton reaching to her feet. This may be seen on her right side extending from her neck to her waist, and again below her knees. The folds and stripes on this garment are added in diluted glaze. On the lower part of the garment they have a brownish color, but on the upper part they were put on so thinly as to be almost transparent. Hanging down over her left shoulder, wound about her waist and then thrown over her left arm is her himation. The weights at three of the four corners of the garment are plainly indicated. This woman extends her open right hand, palm upward, towards the other woman, while her left hand, also open, and with palm upward, is extended to the right. Just above, but not resting on the hand is an object which is perhaps intended for an egg. She seems to be doing a juggling trick with the egg, or whatever the object may be, perhaps tossing it from one hand to the other, while the other woman looks on in mute surprise.

Fig. 5.

The artist has not used many lines in drawing the folds of his drapery, but he evidently experimented considerably before he gave his figures the positions they now have. This is proved by a number of lines which show how he drew in his figures with a blunt instrument before the vase was fired and changed their positions until he finally got the attitudes which he desired. These lines may be seen on both figures, but are more numerous on the one at the left. Surrounding the group is a meander border broken at five places by a square with dots in the corners and a cross in the middle.

The most peculiar feature of this vase is a border of ivy leaves 2 cm. broad just inside the rim (Fig. 5). These are put on in red paint upon the black surface of the interior. The edge of the vase is unfortunately much broken, but 35 cm. of this border still remain intact.

On the under side are two groups of five persons each, one group on each side of the handles. Unfortunately parts of each group are gone. Between the two groups and under the handles is an elaborate palmette ornament (Fig. 6) consisting of three palmettes arranged in a triangular pattern and connected by stems which surround the palmettes, while two stems with ivy leaves appear below. In the best preserved of the two groups (Pl. XXXVIII a) the first figure at the left, evidently male, wears a himation over his chiton. A break destroys the face, but enough remains to show a retroussé nose and a round chin. This

man is leaning upon a staff and looking to the right. The himation is arranged in thick folds about the neck much as on one of the figures on the interior of the vase.

Next comes a female figure moving rapidly to the right, but looking back at the figure just described towards whom she is extending her right arm with the hand open. She wears a chiton with sleeves to the elbow, and a himation wrapped about the lower part of her body and concealing the left arm. The lines on the chiton are added in diluted glaze. The draping of this figure is very similar to that of the woman with the egg on the interior. This woman, too, wears a cap with top-knot like the woman at the left on the inside. Her face is decidedly peculiar. The nose is large and flat, the lips thick and prominent,

Fig. 6.

the chin small and round. Between this figure and the one just described there is in the field an alabastron with bands attached, evidently represented as hanging upon the wall.

The third figure is moving to the right, but has its head turned to the left looking at the first two figures. It is a man. He wears a chiton so arranged as to leave his right arm and shoulder bare. Wound about his waist and passing over his left arm is his himation. His right hand, very imperfectly drawn, rests on his hip, while his left grasps a knotted stick. The head is proportionately large; the features are, unfortunately, damaged by a break in the vase, but the projecting lips and prominent chin are apparent. This man, like the woman just described, is bare-footed. Between the two a girdle is suspended upon the wall.

The fourth figure has lost its head and the upper part of its body to the right. It was evidently a woman, closely draped, wearing chiton and himation, and facing towards the right. The folds of the chiton are indicated by diluted glaze as on the figures already described. On the wall is an object which is, perhaps, intended for a mirror. A similar object, seen in Fig. 8, shows that it can hardly have been a sole as Furtwängler thought.

The fifth figure is gone nearly to the waist. It was a man wrapped in his himation standing with bent knee and apparently leaning on a staff which is seen behind him. The two last figures seem to wear shoes, but the feet are only imperfectly drawn.

On all except the first figure there are numerous lines drawn in with a blunt point by the artist before he arranged his composition as it now appears. The most remarkable feature of this side of the vase is the character of the faces preserved. They appear to be not Greek; or, if they are, to belong to people of the lowest class.

The second group (Pl. XXXVIII b) is, unfortunately, not so well preserved. At the extreme left was a male figure facing to the right, but now broken off just above the knees. He was bare-footed, wore a himation and was leaning on a staff, part of which appears in front of him.

Next came a woman moving to the right, wearing a chiton and a himation. This figure is broken off above the waist, but the posture and the dress of the part preserved shows that it must have resembled very closely the second figure of the first group.

The third figure, that of a man, is lost from the waist up. He has a himation wound about his waist and thrown over his left arm. He grasps a knotted stick in his left hand, and rests his right on his hip. The part of this figure which is preserved is very similar to the third figure of the other group, and the right hand is drawn in the same careless fashion.

The fourth figure has lost its head and shoulders. It is that of a woman, closely wrapped in chiton and himation, facing to the right. This, too, closely resembles what is left of the fourth figure on the other side.

The fifth figure is the only one of this group wholly preserved. It is that of a man with bare shoulders wearing a himation wrapped around his body, and apparently a chiton which has slipped down. He is leaning on a staff and facing to the left. His back is towards the spectator and only a part of his face is visible above his shoulder. Between this figure and the fourth a girdle hangs on the wall.

The dress, that is, the fact that all these figures wear the himation, and the sticks carried by the men seem to show that the artist wanted us to understand that the whole party was about to set out on a journey. The articles hanging on the wall indicate that they have not yet started. Furthermore, the faces are clearly those of people of the lower class. So much may be safely inferred from the drawings on the vase. One naturally thinks of the annual journey from Athens to Eleusis, but the evidence is not sufficient to justify such an interpretation for the two scenes. The interior of the vase is on the whole, better drawn than the exterior. There are several examples of careless work, as, for example, the treatment of the feet and the drawing of the right hand of the middle figure in each of the groups on the under side. But the artist had

skill. He was able to give individuality to his faces, although he did not scruple to give to a second figure a pose which he had already used. The eye is everywhere drawn in profile.

The peculiar red ivy border on the interior seems to connect this vase with two famous cylices in Munich, which are similarly decorated. This fact was first noted [1] by the late Professor Furtwängler, who has discussed the two Munich vases at length in his *Griechische Vasenmalerei.* [2] They are the so-

Fig. 7.

called Penthesilea and Tityus cylices. The ivy border on these vases is identical with that on the vase in Philadelphia, except that berries are added in white paint. There is no trace of berries on our vase although they may once have existed. The decoration of the interior of the two Munich vases is, however, far superior. They show a largeness of conception and a skill in execution,

[1] *Sitz. Mün. Akad.*, 1905, II. p. 259.

[2] Vol. I, pp. 31–35 and 276–280; also Vol. II, pl. 6, 55 and 56.

which sets them apart. But this is not true of the figures on the under side of the Penthesilea cylix. These are not so well drawn and resemble the figures on the Museum vase. Notice especially the drawing of the eye and the pouting lips. It would seem, therefore, as though our vase might have been painted by the man who decorated the exterior of the Penthesilea cylix. Whether the interior paintings were by his hand may well be doubted.

Another vase which was undoubtedly painted by the master who decorated our vase was sold at auction in Paris in 1903 [1] and its present whereabouts are unknown to me. It is slightly larger, having a diameter of 36 cm. and a height of 15 cm. The interior and one of the scenes from the under side are shown in Figs. 7 and 8. The similarity is noticeable at a glance. Compare the first

Fig. 8.

woman at the left in Fig. 8 with the woman at the left in Pl. XXXVII. They are identical. Compare also the gesture of the left hand of the woman with the egg (Pl. XXXVII) with that of the woman similarly placed in Fig. 7, and also of the fourth woman in Fig. 8. Also compare the gesture of the right hand of the woman with the egg with that of the right hand of the second woman in Fig. 8. Then note the turn of the foot of the first woman on Pl. XXXVIII a with that of the fourth woman in Fig. 8. Finally, notice the draping of the figures, the methods of wearing the himation, the lines on the chiton, the frequent use of the *saccos*, or cap with a top-knot, and the objects on the wall. In addition to this, the same elaborate palmette design (Fig. 6) appears beneath the handles on both vases. These two vases, therefore, are unquestionably by the same hand, and their connection with the exterior scenes of the Penthesilea cylix seems reasonably sure.

Furtwängler [2] dates the Penthesilea cylix about 460 B. C. and thinks that

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[1] *Catal. de la col. d' antiquités, Vente à l'Hôtel Drouot, mai,* 1903, pp. 42 ff.

[2] *Gr. Vasen,* Vol. I, p. 282.

the vases which can be traced to this master all date between 470–460 or 465–455. If he is right our vase should probably be dated about 470–465 B. C. The name of the painter, however, still remains unknown.

V.

The Cylix with the Victories.

The Museum has another cylix which in style is clearly connected with the one just discussed although the drawing is inferior. It bears the number M. S.

Fig. 9.

2495. Its diameter is 23.5 cm. and its height 9.3 cm., which is also the diameter of the base. It was found at Orvieto and has been put together from many fragments.

On the interior are two figures facing each other (Fig. 9). At the left a youth closely wrapped in a himation is advancing to the right. The garment reaches below the knee, and a thick fold of it is brought up about the neck like a collar. The youth bends forward as he walks and leans upon a staff. He is bare-footed. The face is in profile and shows thick, pouting lips and a round chin. The ear is indicated by a small elliptical space with a small mark in it left unpainted in the midst of the hair. A fringe of curls borders the face. The upper and lower edges of the himation are indicated by diluted glaze.

To the right another youthful male figure is advancing slowly to the left. He, too, is closely wrapped in his himation, which conceals both arms, and reaches nearly to his ankles. It is also wrapped about the neck in the same way as on the other figure. This youth is also bare-footed and has the same round chin and apparently the same pouting lips as the other, although a break in the vase makes this last point a little uncertain. The hair hangs about the face in locks. Diluted glaze is used to indicate some of the folds of the himation as well as part of its lower edge. Upon both of these figures lines may be seen where the artist experimented in drawing the folds of the garments, and likewise in drawing the legs of the youth at the right, while the clay was still soft. Surrounding the group is a meander border interrupted four times by a square with a cross in the center and four dots in the corners. The inner surface of the vase has a depression in the middle where the base is attached.

On the outside are two groups of three figures each. In the first group (Pl. XXXIX a) there is at the left a youth wearing a himation which reaches to his ankles. His left arm and shoulder are bare. He is moving towards the left, but has his face turned towards the right. Under his right arm which is not visible, he carries a knotted stick. The left hand has the fingers extended. This youth has the same round chin seen on the first of the two figures on the interior. The nose is flat and the lips slightly pouting.

Next to this is a winged female figure evidently a Niké or Victory. Her wings are spread, but her feet are on the ground, and it is clearly the intention of the artist to represent her as just alighting. She is facing to the right, and has both arms extended towards a youth who faces her. In her right hand she holds a small circular object which she seems to be offering to the youth. She wears a chiton with big sleeves, reaching to her feet. This is caught up at the shoulder with a circular brooch. The chiton is spotted. Over this she wears what seems to be a light himation, which hangs in folds around her waist, reaching to the knee. On her head is a cap enclosing her hair, although a few straggling locks may be seen on each side of her ear. The artist has used diluted glaze on the cap, also on the folds of the chiton, both of the lower part and of the sleeves, and has likewise used it to indicate the feathers on the wings. In front of Niké is a four-legged stool. The nails attaching the legs to the body of the stool are seen, as is the seat which was made of leather or some kind of cloth decorated with dots. Diluted glaze was used on the legs for shading.

To the right of the stool and facing the Niké is a second youth wearing his himation in such a way that the right arm and shoulder are bare, while the left arm is completely covered. His extended right hand rests upon the end of a knotted stick the other end of which rests upon the ground. The face of this youth is more nearly like what we are accustomed to regard as Greek.

On the other side of the vase (Pl. XXXIX b) is a similar group. To the left is a youth with back towards us. The head, except the face, the left

shoulder and the back are missing. He is looking to the right. He wears a himation closely wound around him and reaching below the knees. He carries a stick which rests upon the ground, and wears a low shoe. All of the other figures on the vase are bare-foot. Diluted glaze is used on the lower part of the himation.

Next comes Niké facing to the right. She has not yet alighted, but is on the point of doing so. She wears a long chiton and over it a light himation, which hangs in folds over her left shoulder and arm. In her extended hands she holds a fillet. On her head she has a cap, enclosing her hair, except over the forehead, where it is arranged in a puff. Diluted glaze is used on the cap, the chiton and the wings.

To the right is a youth advancing to the left. The himation covers his body and reaches below his knees, but his right arm and shoulder are bare.. His right arm is extended and his hand grasps the handle of a knotted stick. Diluted glaze was used on the legs.

Below the handles is a palmette of eleven leaves enclosed within a frame and with scrolls attached. At the left of one handle there is an olive branch, although there is no corresponding decoration to the right. The space between the inner sides of each handle is left unpainted. On the other side of the vase there is a similar palmette design, but a scroll takes the place of the olive branch. These palmettes resemble closely, if indeed they are not quite the same as those on the Penthesilea and Tityus cylices in Munich. [1]

The pouting lips and the treatment of the eye show the connection between this vase and the cylix with the ivy wreath, but a closer parallel may be found in a vase in Hamburg. This is discussed by Furtwängler and attributed by him to the master of the Penthesilea cylix. [2] There again we find the same pouting lips and the same method of drawing the eye. The position of the youth at the right in Pl. XXXIX b corresponds closely with that of the youth at the right in the Hamburg cylix; [3] and the himation is worn in the same way. Furtwängler describes the cylix in Hamburg as a well preserved example of this master's work. If this is so the vase I have just been discussing must be classed with it. But it is, perhaps, safer to regard the vase in Hamburg and both of the vases in Philadelphia as good examples of the work of the school of the master of the Penthesilea cylix rather than as the work of his own hand. His name remains unknown, but he is nevertheless an interesting figure in the history of Greek vase painting.

William N. Bates.

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[1] Cf. Winter, *Die Henkelpalmette auf attischen Schalen, Jb. Arch. Inst.*, VII (1902), p. 113, Fig. 17.

[2] *Gr. Vasen*, Vol. I, pp. 281 ff.; also Vol. II, Pl. 56, 4–6.

[3] *Gr. Vasen*, Vol. II, Pl. 56, 6.

Battle of Greeks and Trojans.
From a vase in the University Museum, Philadelphia.

Battle of Greeks and Trojans.
From a vase in the University Museum, Philadelphia.

a WRESTLERS.
From a vase in the University Museum, Philadelphia

b SCENE IN THE PALESTRA.
From a vase in the University Museum, Philadelphia.

Youth about to Sacrifice.
From a vase in the University Museum, Philadelphia.

A Sleight of Hand Trick.
From a vase in the University Museum, Philadelphia,

a Men and Women Conversing,
From a vase in the University Museum, Philadelphia.

b Men and Women Conversing.
From a vase in the University Museum, Philadelphia.

a YOUTHS AND VICTORY.
From a vase in the University Museum, Philadelphia.

b YOUTHS AND VICTORY.
From a vase in the University Museum, Philadelphia.

A CAERETAN AMPHORA.

The Free Museum of the University of Pennsylvania purchased in 1896 eight Greek vases which had once formed part of the collection of Tewfik Pasha, Khedive of Egypt. Among the vases thus acquired was the interesting and somewhat peculiar one reproduced in Plate XL. It is an amphora 29 cm. high, with a diameter at the top of 12.7 cm. and at the base of 11.25 cm. The vase has an elegant shape, but a simple painted decoration. It has a graceful neck, broad mouth, flat, wide-spreading handles connecting the body of the vase with the lip, an oval body and a well-proportioned foot. A small ridge or moulding separates the body from the neck, and another from the foot. The handles are 2.7 cm. wide and ornamented on the outside with two vertical bands of black, each 1 cm. wide, between which is left a band .7 cm. wide unpainted. The color of the vase is a warm pink with a fine glaze. About the edge of the lip is a band of black 1.7 cm. broad; then inside of this is a band in the natural color of the clay 2.2 cm. broad; then finally the inside of the neck is painted black. The neck itself is also black. On the shoulder are twenty-one rays alternately black and white except in one place, evidently where the artist started, where two white rays come together. The white paint was overlaid upon black, that is, all of the rays were first black, and the white paint applied afterwards. The body of the vase is decorated with eight parallel black bands, .8 cm. wide with the exception of the lowest which is 1.2 cm. wide, alternating with as many narrow brown bands. The decoration is so arranged that between every two black bands a band of equal width was left in the natural color of the clay, and this in turn bisected by the narrow brown line. About the foot of the vase is a tongue pattern in red and white exactly as on the group of vases known as Cæretan hydriæ. There are thirteen of these "tongues" drawn in as follows. First the outline was scratched in with a dry point and the space so enclosed painted black. Then red or white was overlaid upon the black in such a way as to leave a narrow black border 2 mm. broad running the round edge of the "tongue". The colors alternate except where the painter began his decoration and here two white "tongues" come together. The vase is carefully finished and is still almost perfect. The only injury which it has suffered is a small break on the foot.

The question which naturally suggests itself first is where we should classify this vase? The peculiar ornamentation of the foot would seem to connect it with the Cæretan hydriæ.[1] This interesting class of vases has been dis-

[1] This classification was first suggested to me by the late Professor Furtwängler.

cussed at length by Dümmler,[1] Pottier,[2] Endt,[3] and Furtwängler,[4] and it is agreed by them that they were all made at about the same period. What that period was is not certain, but there is some reason for believing that it was towards the middle of the sixth century B. C. Twenty of these vases are enumerated by Endt, and all of them, so far as known, were found at Cære in Etruria whence their present name. They are all hydriæ, and as Furtwängler points out are so closely related in form, decoration, and technique that they may all be assigned to the same workshop. There are, however, differences in the execution. Some are much more richly decorated than others and the drawing is more carefully done, but this might be expected. The finest specimen is the so-called Busiris vase in Vienna.[5]

These vases have nothing in common with Etruscan work, but have much to connect them with Ionia. Pottier[6] has shown at length the connection between them and the sarcophagi from Clazomenæ which are undoubted specimens of Ionic art; and Dümmler has shown their connection with various Ionic vases, especially with those of Cyme. The result of this study is that it is now generally agreed that these vases were made in Asia Minor. The idea that they came from a Greek colony in Africa, an idea which arose chiefly from the appearance of negroes and monkeys upon them, now seems untenable. When, however, it comes to determining more closely the place of their manufacture our evidence is less sure. Dümmler suggested Phocæa, first because Ionic pottery not very different is known to have been made at Cyme near by; second because Phocæa took part in the founding of the Hellenium at Naucratis;[7] and third because Phocæa is known to have had intercourse with Etruria.[8] These are certainly good arguments, and although as yet no pottery of this kind has been found at Phocæa, this town may be accepted provisionally as its place of manufacture. If we could be sure of this we might have some evidence for the date of these vases, for in that case it would be natural to suppose that the makers of this pottery wandered to Cære at the time of their expulsion from their native town by the Persians. But be that as it may, the prevailing opinion that they were made in Asia Minor and exported to Cære is borne out by the fact that they show no foreign influence.

Shall we then class our vase with the Cæretan hydriæ, that is, shall we call it a Cæretan amphora? Its most distinguishing characteristic is undoubt-

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[1] *Mitth. k. d. Arch. Inst. Rom. Abt.* III, 1888, pp. 166 ff.

[2] *Bul. de Cor. Hel.* XVI, 1892, pp. 253 ff.

[3] *Beiträge zur Ionischen Vasenmalerei*, pp. 1 ff.

[4] Furtwängler and Reichhold, *Griechische Vasenmalerei*, pp. 255 ff.

[5] Cf. Furtwängler and Reichhold, *op. cit.* pp. 225 ff. and Pl. 51.

[6] Cf. *op. cit.* XVI, p. 241.

[7] Hdt. II, 178.

[8] Hdt. I, 163.

edly the red and white decoration around the foot, and this we have seen is found on the hydriæ from Cære. It seems likely, therefore, that our vase really should be classed with these vases, although no Cæretan amphora has been published up to the present time. In the Boston Museum of Fine Arts there is a small amphora (No. 332) which has some analogies with the hydriæ from Cære, but it lacks the decoration on the foot. So far as we can see, however, there is no reason why the makers of the hydriæ should not have made amphorae as well. The beautiful shape and finish of the vase in Philadelphia may also be regarded as an argument in favor of this classification. Unfortunately the vase will throw little or no light on the place of manufacture of the Cæretan hydriæ, even if this classification is accepted. When the group of vases, of which this was one, was purchased it was stated that they came chiefly from Chios and Samos. If this statement could be depended upon, the Ionic origin of the vases would receive further confirmation, but, unfortunately, it is too uncertain to enable us to place much confidence in it. Our vase, however, must be regarded as an interesting, if not unique, specimen of the Greek potter's art.

WILLIAM N. BATES.

AMPHORA.
In the University Museum, Philadelphia.

NOTES ON THE ETHNOLOGY OF THE OSAGE INDIANS.[1]

In the winter of 1908 while holding a Harrison Fellowship in Anthropology at the University of Pennsylvania, a special provision was made by the Provost which enabled me to make a third visit to Oklahoma to complete my investigations among the Yuchi Indians. During this time I came in contact with the Osage, neighbors of the Yuchi, and I took the opportunity of making the notes which are here presented.

Two Osage camps were visited at the time, with an interpreter furnished by the Indian agent Mr. Millard. The information given here was obtained from Frank Corndropper, and Black Dog through the interpreter, Mr. Thomas Mosier, himself an Osage who added explanations to the accounts given by the informants. All of these men are considered reliable. The Osage offer a rich field for ethnological inquiry in almost every branch. They are apparently one of the most conservative tribes of the Plains, and it is hoped that this very brief sketch may prepare the way to a more complete study.

As to houses, the commonest type is the dome-shaped lodge of poles stuck in the ground, bent over and bound together, then covered with skins or matting in former days, but now with canvas. The ground plan of this type of lodge is somewhat variable in form and size, being circular, oval or oblong, and from fifteen to twenty-five or thirty feet in diameter. In height the structures range from about eight to ten feet. The framework of the lodge consists of upright poles arched and overlapping on top where they are bound together. These poles are so graded as to form a dome-shaped framework, the lower

[1] The Osage Indians, one of the southern tribes of the Siouan linguistic stock, when first known to the whites inhabited in general the west bank of the Mississippi river, below the mouth of the Missouri. Later they moved to the Osage river and from there to the Arkansas. Here they became domiciled on a reservation, after 1871, of about 1,400,000 acres, since known as the Osage Nation, Oklahoma. The population is about 1,700, of whom some 800 approximately are full bloods.

Although several valuable ethnological papers have been published concerning the Osage, no systematic attempt has been to study the tribe. These papers, some of which will be referred to in this sketch, are, (*a*) *Osage Traditions*, J. Owen Dorsey, Sixth Annual Report of the Bureau of Ethnology (1884–1885). (*b*) *A Study of Siouan Cults*, J. O. Dorsey, Eleventh Annual Report of the Bureau of American Ethnology (1889–1890). (*c*) *Siouan Sociology*, J. O. Dorsey, Fifteenth Annual Report of the Bureau of American Ethnology (1893–1894). (*d*) *Traditions of the Osage*, J. A. Dorsey, Field Columbian Museum Publications, No. 88 (1904).

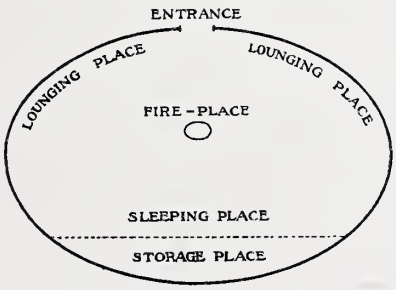
arches near the ends, the higher ones near the middle. Several tiers of horizontal poles are then made to encircle the uprights, beginning near the ground and ending near the center on the top. The lodge is then ready for its covering, which consists of canvas at the present day. Sheets of this are thrown over the framework and their ends fastened by stakes and ropes to the ground to prevent them from being blown off in a gale. One of the sheets which directly covers the top is allowed to be loose, so that by pushing it up with a pole it will allow an exit for the smoke from the fire within. The doorway to the lodge is formed by leaving one of the canvas sheets unfastened, so that it can be pushed to one side and will stay back when put there.

In the center of the floor space is the fireplace, a hole from a foot and a half to two feet wide and a few inches deep. The smoke ascends directly from the fire through the opening in the canvas roof. When earth and sods are piled up around the sides of the lodge for a space of about a foot to keep out surface drainage during wet weather, the lodge may be considered complete. The whole thing resembles the ordinary sweat lodge, so common among the plains tribes. With the Osage it now seems to be the characteristic dwelling.

House furnishings, so far as my observations went, are as follows. The beds consist of blankets spread out on the ground in the rear of the lodge, that is, on the side opposite the entrance. Over the space devoted to sleeping is stretched a sheet of stuff to serve as an inner roof or partition. This helps to keep the heat down near the sleepers in winter. Along the sides of the lodge from the entrance backward, are bundles of blankets for seats, lounges, or beds. Here the occupants spend their time when indoors in conversing, eating or resting. Cooking utensils lie around on the floor near the fireplace and a vessel of water with a ladle handy, stands near the door for refreshment. A pole is commonly suspended in most lodges from the roof, so that it stretches across the interior, nearly over the fireplace. Upon this they hang clothes and moccasins to dry. Upon the poles which form the framework of the lodge are hung ornaments, articles of clothing, utensils, and weapons, giving to the whole interior a picturesque and ornamental effect. Beaded buckskin bags and bags of woven worsted ornamented with conventional designs, hang upon the walls as common receptacles. Other finery, dance paraphernalia, and trophies are stowed away in trunks which are piled up along the rear wall behind the sleeping space. The accompanying diagram shows a fairly typical interior arrangement of the Osage lodge. Pottery and basket-making were very little practiced by the Osage, and formerly where carried on even these arts have about died out. Spoons and ladles of buffalo horn are used in eating. The handles of the horn spoons are fancifully notched on the edges, and by being boiled until they are soft may be bent into desired shapes which become permanent when dry. Brooms of twigs bound together are used to sweep the floor.

The child's cradle-board is a prominent piece of furniture in each lodge. The construction is simple, consisting of a three-foot board, square at the ends, with a rectangular bar extending out a foot or so, perpendicularly in front of where the child's head lies. A cushion the length of the child's body, with the necessary wrappings and covers, completes the cradle-board. Bells, however, are fastened to the bar to keep away evil spirits, and decorative effects are made with brass-headed nails or by carving the section of board above the cushion. Then additional carrying thongs and binders for the head bar are added when desired. As may be seen, the type of Osage cradle-board is quite different in its details from what is found in some neighboring tribes, in that there is no hood, or lacings or foot-rest and the board itself is a plain rectangle.

The lodges in the Osage villages are scattered promiscuously about. The villages themselves are usually near some stream where there is an abundance of timber and water for the people and their horses. Somewhere near



Ground Plan of Osage Lodge.

the center of the village is the dance ground, a circular, well-trodden space where councils and dances take place either in the open, or, as is common now, in a circular dance house with a high conical roof. A typical modern dance house of this sort stands in the Indian village near Pawhuska. A shingled roof now replaces the brush roof of some years ago.

In former times the pursuit of the buffalo and other prairie game animals formed the chief occupation of the Osage men. The various parts of the buffalo furnished them with house coverings, clothing, utensils and food and in the inner life of the tribe so much importance is given this animal that culturally the Osage fall under the general classification of "buffalo Indians," at least from the time when they first struck the prairies in their migrations. Other features of their culture and their own traditions seem to indicate that before emerging on the plains they were forest Indians leading a life somewhat similar in content to that of the Central Algonquin and western Muskogian peoples. Some agriculture, however, was practiced by the women, who cultivated little patches of corn and tobacco. Horses, and before them dogs, were extensively used in

hunting. Warfare was also extensively carried on—so it is said—with the Pawnee, Wichita, Comanche and, later, with the Cherokee.[2]

The clothing of the Osage did not differ materially from that of the other southern plains tribes. The men wore leggings with decorated outer flaps, breech-cloth and moccasins. The main outer covering was a buffalo robe, now replaced by the store blanket. Shirts of calico are worn at the present time. Duffel and stroud have replaced buckskin which is now hard to get, but in other respects the type of clothing has not changed much among the older men. Women, however, wear waists which hang loose over a belt, and skirts, which reach about half way from the knee to the ankle. The breech-cloth, leggings similar to the men's but shorter, moccasins and a blanket or shawl, complete the woman's usual attire. There are, however, a number of articles of modern form Indianized, so to speak, which are greatly favored by the Osage. Such things as vests, coats, and kilt-like aprons with various native decorations are meant. Garters, or knee bands of decorative bead work, or of wool, are also common. Strips of leather studded with sleigh bells usually take the place of these garters during dances. Collars like boas are also worn on such occasions consisting of strips of fur set with mirrors or other metal ornaments. The decorations of the flap ends, vest and coat fronts and tobacco pouches appear to be both of the conventional and realistic sort and frequently carry some symbolical interpretation which offers quite a field for investigation. Some of these common designs observed were triangles in series, vine-like borders, ovate figures, lozenges, zigzags, crescents, human hands, figures resembling fleur-de-lis, trees, the three prong, cornstalks, horns, checkwork, bars and stripes. The beadwork designs on Osage clothing, so far as was observed, seem to be produced in outline with open and closed interior, but without a beaded background. In the outline or border figures white seems to be the prevailing color. This type of decoration apparently belongs to the southern plains tribes, according to the classification made by Dr. Kroeber in his excellent discussion of the beadwork designs of the Plains.[3] Osage tobacco pouches, however, were seen with the solidly covered areas of beadwork on their lower portions. Beadwork neckbands with conventional patterns are still commonly worn on public occasions. Fans of eagle or turkey tails and wings wrapped together with cloth are affected by the men. Quantities of white and purple beads are worn loosely about the neck by both sexes. The common bone bead breast-plate so general among the plains Indians is much prized by the Osage. They are also fond of attaching narrow strips of leather studded with brass-

[2] The Osage are among the indians who took the scalps of their slain enemies and kept them as trophies. It is said that many of them formerly owned numbers of these trophies which were carefully guarded.

[3] Ethnology of the Gros Ventre, pp. 151–160. Anthropological Papers of the American Museum of Natural History, New York (1908).

headed nails to articles for ornamental purposes. In fact there seems, in a casual glance at a group of Osage, to be almost no limit to the variety and number of ornamental devices known to them and the few mentioned here do not by any means represent a complete list. The type of moccasin peculiar to them is that in which the seam runs along the outer edge of the foot then up the back of the heel. Trailers are frequent on men's moccasins. The thongs are wound once over the instep and under the sole of the foot, then wrapped about the ankle and fastened.

Hair dressing and head gear is rather an elaborate matter with the Osage. The characteristic hair dressing of the men was to shave the crown clear with the exception of the topmost area and to leave a ridge of short hair here and backward nearly to the neck. The effect resembles a comb, broadest at the front and narrowing behind. In the middle of this ridge of hair is a little braid which is retained to fasten feathers and other hair ornaments to. Such a style in scalp locks, commonly termed roached, is still in vogue among the older men, but has been given up by the progressive ones and by those who have adopted the mescal religion to be mentioned later. It is common among the Osage for the men to wear a head band of fur or some modern substitute for it. In this head band men frequently carry their personal medicine fetishes. The men who belong to the mescal eating sect, wear their hair long, parted in the middle, and braided on each side with the addition of some gaudy ribbons or strips of yarn. Women customarily wear their hair parted in the middle, gathered behind the ears and braided likewise. The old women allow theirs to hang loose sometimes just tied with a string at the end to keep it from falling all about. It must be remarked that the modern native costume of both sexes is among the Osage and neighboring Indians in Oklahoma, intrinsically remarkably pleasing, cleanly and comfortable. The tendency among many of the educated young people, especially women, is to retain it with the sanction of their liberal and intelligent teachers. Ornaments in the nature of very attractive German silver and silver bracelets, brooches, fastenings, hair combs, head bands, arm bands, finger rings and earrings are very common. The men have usually three perforations in the cartilage and lobe of the ear in which they wear elaborate pendants or rings. The women generally have one perforation for ornaments in the lobe of the ear.

Tattooing is common on both sexes. Men have it chiefly on the throat, neck and breast; women on the forehead, forearm, wrist and back of the hand as far as was observed. The designs seen were quite varied and all have reference to membership in and initiation into the different grades of the religious secret society.

The Secret Religious Society.—Like many of the tribes of the Plains the Osage had a secret ceremonial organization. This had reached a special development in some respects with the Osage, but nevertheless, there are

points of correspondence between it and the secret societies of other tribes. J. O. Dorsey gives an account of some ceremonial practices connected with the secret society and some sacred myths belonging to it. (Cf. ref. *a*, Note 1.) The following comprises what I could learn regarding it in the short time at my disposal.

The main purpose of the society, which is said to continue in a weak existence to-day, is to preserve the memory of the various tribal and gentile sacred myths, and the tribal rituals. There are said to be seven grades of membership. Each of these grades has certain myths and rituals in its possession and advancement from one grade to another is attainable to those members who have shown proficiency in their own grade and who seem qualified in the eyes of the higher group to be admitted with them. A fee, usually a pony, is required of the candidate at the time of his promotion and an elaborate ceremony marks the event. The society meets at certain times. The members range themselves in two parallel lines facing each other on the prairie. The different grades of the society are grouped together, the highest in rank at one end, the next lowest beside them and so on down to those of the lowest grade who are at the foot of the lines. The meeting may be the occasion for initiating a new member or advancing one to a higher grade. The meeting lasts from early morning till sunset and the time is taken up in recitations, by the different grades, of the myth and ritual belonging to them. The members have bundles of sticks representing their various mythical songs. These sticks serve as mnemonic aids and are preserved as records. If the body of material retained by the seven orders cannot be rehearsed in one day the meeting is adjourned and continued on the next day. It is said that three days were sometimes taken up by these functions. Besides the mere reciting of myths, the society has its own ceremonial performances. The members of the highest grade are literally priests who have charge of the ceremonial part of the affair, and the initiation and promotion of members. One of these priests is chosen for his ability and supernatural power to be the head of the priesthood and the whole society as well. The interpreter likened this dignitary to a pope. One of the ceremonies performed by the head priest takes place at sunrise, when a meeting is on. The members are ranged, as explained before, in their proper rank before the sun appears above the horizon. At the proper moment when the sun rises, the head priest passes down between the lines holding in his hands a stuffed dove skin pieced out with a crow's head and tail. There is some doubt about the actual composition of this figure, according to different informants. It was also stated that the stuffed skin of a crow painted with blue, is used. Two attendants move along with the head priest. As he comes to each member he places the figure on the member's head as a sanctification. The idea involved in this rite is that the dove or crow, whichever it may be, will carry a message to *Wakàṇta,* the supreme spiritual being. The message

is usually some vital desire of the people, a prayer for immunity from sickness, the aversion of some impending evil, or success in some project. The crow skin is said to be used because he is the first bird awake in the morning and so will be the quickest and earliest messenger.

When a new member is initiated into the society, he starts in with the lowest grade. He has to pay a fee and is brought before the assembled society and initiated by certain ceremonies which take place before the sacred bird figure already referred to. The initiate has also to provide a feast for the members and the expense involved by this prevents many people from joining. It is a highly desirable thing, however, for a man to join and sometimes he will amass wealth a long time beforehand in order to bear the expense of initiation. An initiate is said literally to "make peace with *Wakànta.*" Men, women and even children are eligible to membership, provided they have the means, and also the favor of the other members.

Feasting was an important function at the meetings of the society. The male members gave up their energies, in the old days, toward the accumulation of quantities of buffalo meat which they dried and laid up to be divided among the members and eaten during the time of the gathering. The buffalo meat thus eaten was considered a sacrifice to *Wakànta.* I was told that one thousand pounds of dried buffalo meat were sometimes used up in the days when the religious society was more prominent in their life than it is now.

The members of the society are distinguished by peculiar designs in facial painting which are applied on ceremonial occasions. But the chief point of distinction with them is that to wear a certain pattern in tattoo is the privilege of the members of the seven grades. At promotion from a lower to a higher grade the member receives the tattoo design of his new grade and by it he is known thereafter. Naturally the priests of the highest grade have the most elaborate tattooing. There are several Osage now living who are members of the priesthood and they are said to be the only ones who know the exact form and meaning of the designs.

Although I could learn nothing regarding their interpretation or symbolism, I observed some tattooed individuals of both sexes. Parallel lines about half an inch apart were noticed on one man, running from ear to ear across the throat. Another had a single line similarly located with several intersections on the throat, running down on the chest. Series of a few parallel lines appeared under the chin and throat of another, while an elderly man had a ladder-like pattern traced from the angle of both jaws downward toward the chest with intersections and branchings that seemed to continue out of sight beneath his shirt. Women have a star-like figure on the back of the hand and a long-stemmed cross on the forearm and wrist. Another showed two small dots tattooed just above the bridge of the nose, one above the other. All the tattooing observed was done in dark blue, the lines being about one-eighth inch wide.

Another mark of distinction worn by members of the religious society is said to be a feather tail, sometimes of the white heron, to which bells are attached.

Social Groups.—The information which I obtained concerning the social groups of the Osage is far from being complete. J. O. Dorsey has given a much more complete account of them (cf. ref. *c*, Note 1). The material obtained by him does not agree closely with that offered by my informants, and I conclude that my own is less reliable and is more in need of corroboration than his.

The groups claim to be descended from the animal or supernatural object which they are named after. Descent in them is through the father. Quite remarkably, Thomas Mosier, the interpreter, asserted that the groups observed the endogamous regulation; that marriage took place between members of the same group. Each of the groups or gentes according to the modern terminology has a chief whose position is also hereditary in the male line. The installation of a new gens chief after the death of an old one was an occasion of great importance. The gentes all had tattoos, rules, and ceremonies of their own, but they are seldom observed by the Indians now. The names of the gentes given to me are as follows:

Bear	Wasà^{c}pe[4]
Eagle	Xülàx
Dog	Cò^{n}kye
Buffalo	Tsetòka
Snake	Wēts'à
Peace Man	Tcì̀cū
Fish	Hū
Thunder	Gro^{n}hò^{c}ta^{n}

Two of these gentes had important political functions, supplying the two tribal chiefs. One was the Tcì̀cū, or Peace Man gens. This group elected a village chief whose policy was always toward the preservation of peace, order and quiet. He was the civil leader, so to speak, of the village. The duty of this officer, backed by his gens, was to be peacemaker, advising for the peaceable settlement of intertribal disputes and operating as a go-between in the establishment of peace after war. Furthermore, no blood could be shed in camp where the Tcì̀cū people resided. Captives, enemies, and criminals were safe from molestation as long as they kept within the Tcì̀cū camp boundaries.

[4] The characters used here represent the following sounds: x, a surd palatal spirant, like German *ch* in *bach*; c is like English *sh*; tc is like English *ch* in *church*; r is like English *r* slightly trilled; ^{c} indicates an aspirated vowel; ' a consonant with hiatus; ^{n} indicates nazalized vowel; a̤ is like *u* in English *but*; overlined vowels are long, if not marked they are short. The other characters represent the same sounds as in English.

The other gens of about equal importance was the Gro^{n}hò^{c}ta^{n}, or Thunder gens. This group elected the war chief of the tribe. They were always for war and bloodshed, being the first to clamor for action and to take up arms. The war chief corresponded roughly to a general who had charge of all military matters and whose control was almost absolute over the warriors during war time. Neither this chief nor the civil chief holds his office necessarily by heredity, but were rather chosen by the people.

When the tribe, or part of it, was out on the war path or on a buffalo hunt, the different gentes ranged themselves, according to a certain order, in the form of a circle. The right half of this camping circle was known as the War side and the left half as the Peace side. On the War side the Thunder gens held the position nearest the entrance opening of the camp circle, while the Peace gens held the opposite side of the entrance. On the right or War side all the military ceremonies and councils took place, but on the Peace side all was quiet and tranquil and, as said before, no blood was ever shed. When, however, the War side embarked on an expedition the Peace side favored them with prayers for success and a safe return. The civil chief for the time became a sort of priestly mediator who performed certain rites and constantly made prayers for the warriors.

Marriage Ceremony.—The marriage observances of the Osage embody both the ideas of purchase and marriage by capture, as will be seen. When a young man has picked out the girl he wants to marry he consults with his family over the matter. They appoint a go-between or messenger from among them who is sent to the girl's family to open negotiations. Both families then meet separately and the subject is under discussion for a while. When the girl's family have come to a decision the go-between is given the answer to carry to the man's family. This first decision if favorable does not conclude the matter, it merely betokens willingness for the arrangements to be gone on with. The man's family then provides a meal of choice articles and the food is taken to the family of the girl, who are assembled in readiness. If they accept the meal and eat it, it signifies that they are agreeable to the union; if, however, they do not eat, it is a sign of refusal. In the latter case the attempt may be made several times as the negative is only a tentative one not at all absolute. When acquiescence has been obtained, the two families palaver over the price to be paid for the girl. When this has been decided upon it is announced publicly. At another meeting the horses and property to be given in payment are brought up by the man's family and divided among the different members of the girl's family. Thereupon they settle upon a day for the marriage.

On this day both families gather together. The girl, dressed in her best finery and armed with a gun, is mounted on a pony and is brought toward her prospective husband and his family until within a short distance. Suddenly

she fires the gun and dashes off as if to escape. The bridegroom's family, at this signal, start in pursuit of her and everyone tries to be the first to seize her. The first to reach her, if he is a man, gets her horse; the second, the gun. If a woman be first, she gets the bride's finery and outer clothes; the second woman gets what is left. When the bride is caught she is brought to the lodge of the groom's family. Here the couple dine together and the two families exchange presents. During the ensuing night the couple sleep together in the groom's lodge. The next morning they are escorted to the bride's mother's lodge. A fine horse is then presented to the girl's brother by the family of the groom. This concludes the gift-making and marriage ceremonies. The husband from this time on becomes the owner of all the property owned by the bride's father and mother and he steps into place as the head of his wife's family. The bankrupt father and mother of the bride then expend their last possessions in giving a big feast to the village. The more elaborate and bountiful this feast is, the more they are held up in the community. Their son-in-law has to maintain the bride's family thereafter, but in other respects the property he steps into is all his own. By a careful selection on the part of a young man or his family a very profitable union can be made, so it is the desire of most of the young men to find an heiress.

The children of the union, in accordance with the patriarchal system, belong to the gens of their father. Their personal names usually have some reference to the gens totem or one of its characteristics. Personal names frequently change during life as a man wins renown from some exploit, or as he enters and is promoted in the religious society. Incidentally twin children are considered unfavorable manifestations and one of them was usually killed. It was not uncommon for the mother of twins to be killed also. The Osage had the custom of abandoning or killing the aged and infirm. Polygamy survived until a few years ago among the conservative Osage and undoubtedly exists yet.

The Mourning and Offerings Ceremony.—The Osage themselves recognize the ceremony to be described now as their most characteristic religious observance, ranking it in prominence with the ceremonies of the secret religious society. Briefly the mourning ceremony or War Dance, (*Wacàpēwì*) as it is commonly called, is the ceremonial of securing an offering to pay for the entrance of a human soul into the future life. The belief is that the human soul after death remains in a sort of sleep until some one of the people on earth discharges the obligation imposed upon him by invoking the supernatural powers for aid and going off at the head of a band of warriors to kill an enemy and secure his scalp as a payment offering. When the ceremony has been completed and the payment offered, it is believed that the dormant soul is ransomed, as it were, and allowed to enter the realm of spirits. The ceremony is evidently a long, interesting, and very complex one, even in the

modified form in which it is performed on rare occasions nowadays. The following meagre account of it is offered as described by my informants after some discussion among themselves of its details. One of them had taken part in performances, and the interpreter had witnessed them.

When a man dies he is enclosed in a box and laid on the ground usually on some picturesque hogback of the prairie where there are other graves of the same sort. The places where the dead are deposited are usually within sight of the villages and the boxes have poles stuck in the ground near them with flags and streamers attached. (A typical locality is to be seen near the Pawhuska village.) Soon afterward the family of the deceased consult and decide upon some male relative and appoint him to be the mourner. Henceforth he is under the obligation of discharging his responsibility by spending a period in fasting and abnegation and finally by conducting the ceremonies which end when the scalp for payment is secured and offered up. This man is called *Wacòwagade.* In the actual ceremonies he is the master of the occasion. For his services he is to receive a recompense in the shape of some horses. From the time of his appointment the mourner does not cut or dress his hair. He eats and drinks as little as he can and yet keep going. He goes without clothing and spends most of his time alone praying in his lodge or out on the prairie apart from others. The idea is for him to reduce himself by deprivation as much as he can as a form of sacrifice and sanctification for the coming ceremony. The mourner sets a date for the performance of the ceremony, usually planning to have it take place during some pleasant season as far ahead as he thinks he can stand it. In the meantime he chooses four men from each side of the camp circle, the Peace side and the War side, to aid him in the ceremony. These assistants on their part each choose two more men to act as their aids, and do their errands. Then these men ask for volunteers from the village. The volunteers are wanted to make up the party that starts off on the raid to secure the enemy's scalp. They also have to take part in the dancing when the ceremony itself is begun. Usually ten or fifteen men volunteer for this dancing and war party service. Then eight or ten more are appointed to do the singing at the dance. In all there may then be from thirty to forty participants in the ceremony with the mourner as their leader.

When the interval of time has expired and the day set for the dance has come the mourner is about at his worst. He goes into a special lodge erected for him and stays in it thereafter from sunrise till sunset, while the dancing is going on. I was informed that in recent years this ceremony was performed in the dance house near the center of each village, but that in earlier times a special lodge, consisting of a center pole, surrounded by a brush screen and having a brush roof, was sometimes erected for it on the prairie. In the morning of the first day at sunrise the participants begin to dance. They are arrayed in their best and carry pipes, guns or weapons in their hands.

The dancing is continued all day and when the sun sets a special dance is performed called the Sundown Dance. This is to close the dancing for the night.

The dancing is thus kept up for another day, being started in the morning by the Sunrise Dance and closed with the Sundown Dance. During the dancing the mourner stays alone, fasting and praying. In one of the dances I was told two lines of men circled around toward each other passing in concentric circles while the leader of each file held a bow in his hands.

On the morning of the third day, just as the sun rises, the participants in the ceremony form abreast, facing the sun. They are all mounted and fully armed. The mourner is at their head holding a bow and equipped with arrows. The moment the sun appears above the horizon the band yells and starts off on the run, led by the mourner. The band keeps on, generally in the same direction, until they fall in with some enemies on the trail or in camp. They give battle and during the skirmish the mourner tries to secure a scalp. As soon as he has killed someone he plunges the bow into the wound and tears off the scalp. The desired object having been secured, the band draws off and is ready to return. When the village is reached the participants join in the Peace Dance. In this the mourner leads the dancers and, holding the scalp he secured, chants a victory song. He addresses the ransomed soul and *Wakànta* and displays the payment. The Peace Dance symbolizes the successful passage of the soul into the spirit land. Women take part in this performance. After this dance the mourner washes himself, dresses and trims his hair, puts on good clothes and, as they say, becomes reconciled to his people. His obligation having been discharged, he receives his payment and holds thereafter an advanced position in the esteem of the tribe.

In concluding this brief account of the ceremony, it might be added that the Osage often incurred the hostility of the government and the settlers by attacking whites while on the raid for scalps. It is given as one of the chief reasons for the continual enmity with which they were regarded by the neighboring Indian tribes of the Plains. In later days, the Osage came to substitute the scalp of a wolf, bird, or other creature for the human scalp, and when the ceremony is performed nowadays this is done. The scalps which were taken in the past have been preserved, and are said to be quite numerous among the Osage to-day, although kept hidden away.

Visiting Ceremony.—A common practice with the Osage and neighboring Indians, is the giving away of ponies and property to visitors. This is called the Pony Smoke Dance. When visits take place between different Osage bands or between Osage and other friendly Indians the visiting party halts some distance from their destination and sends a messenger ahead with the news of their coming. Then when a short time has elapsed the visitors come nearer and range themselves in a semicircle on the prairie in front of their hosts. One of the party that is being visited then comes forward, carry-

ing his lighted pipe and leading a pony or carrying some presents. He selects one of the visiting party, offers him his pipe to smoke and at the same time announces in a loud voice what the nature of his gift is, sometimes doing so in a speech of welcome and flattery. When the visitor smokes it is a sign that he accepts the gift. Then another of the resident party offers a gift and so on until those who desire to do so have all displayed their generosity and contempt of wealth. The visiting party is then escorted within the village and feasted.

Later on the visited people may arrange to visit their former guests, and then the gift-making is repeated while they are the recipients. A man who has received a gift once, usually is expected to outdo his donor when he has the opportunity and thus show his superiority over him.

A few other ceremonies were learned of among the Osage. They celebrate one when the corn is ripe. This is the Green Corn Dance. Before any of the fresh ears of corn are eaten, and when the harvest is to be gathered, they devoted a day to dancing and concluded with a feast of the green corn. The elements of sacrifice and the emetic, so far as could be learned, are not known to the Osage in connection with this festival. As they did not cultivate the ground extensively the harvest ceremonies were not as elaborately developed as among the tribes east of the Mississippi.

The Osage have other social and pleasure dances, according to my informants, which play quite a prominent part in their village life.

The use of the mescal bean and the ceremonies of the mescal worship have become quite general among them recently.

About five years ago, I was informed, a Southwestern Indian named Wilson, came to the Osage, introducing the mescal religion. Most of the Indians at the Hominy camp and elsewhere in the Nation have taken it up and become devoted to it. Pictures of Wilson are in demand among the devotees, who kiss them on sight. The man has been deified since his death. The agent states that the mescal religion has the beneficial effect of causing the Osage to give up whisky drinking. The younger Osage and those who have embraced the mescal rites, may be distinguished from the old conservative element by their manner of wearing the hair in two braids supplemented with ribbons and yarn hanging down on their chests.

The medicinal practices of the Osage are in most respects, so far as was learned, similar to those of the other Siouan tribes. Shamans, or doctors, employ a section of buffalo horn as a sucking tube. Cuts are made in the patient's arms, wrist, chest, or over the seat of pain, and the shaman applies the tube to the incision to suck out the trouble. Various practices of exorcism which are the particular property of the shaman are also brought into play over the patient.

F. G. Speck.

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